The Commercial Car Journal

VOLUME XIV | PHILADELPHIA, DECEMBER 15, 1917 | NUMBER 4

Philadelphia Newspaper's Motor Fleet

The Public Ledger Probably Has Best Daily Paper Delivery in the Country

By K. HERRICK

SCORE one more victory for the motor car supplanting the horse and wagon for newspaper delivery. The latest large newspaper publishing concern to adopt the automobile delivery truck is the Public Ledger Co., of Philadelphia, publisher of the Public Ledger and the Evening Ledger, which, the first week of November, put into operation its full battery of 49 cars, some 30 of which are new, disposing at auction sale of its 75 horses, wagons and sets of harness—the discard of progress in circulation-building. Only eight horse-drawn vehicles were retained for "slow deliveries" in the center of the city, where it is not so much of an object to make speed through the traffic.

The Ledgers' new line-up is now as follows:

Twenty-three Dodge trucks.
Six Garfords.
Five Autocars.
Two Vims.
Two Packards.
One Overland.
One Maxwell.
Nine Fords.

With the exception of the Autocars, which are two-ton machines the heaviest delivery trucks are of three-quarter ton, most of the Dodges answering this description; others are estimated at 800 lb. One of the Overlands is a new light photo patrol, which keeps the Evening Ledger illustrated section largely supplied with its pictorial news of the day, and one of the Packards is an up-to-the-minute service car, which is "shot out" in case of breakdowns on routes, being equipped with every modern convenience for such exigencies. All the other cars can be used for deliveries, except one of the Fords and the Maxwell. Four gallons of gasoline daily is usually sufficient for each of the delivery cars not having a long route.

Two Views of the Public Ledger's Service Car, With its Special Body, Just Completed and Not Yet Stocked With Tools and Equipment
Mounted on a Packard six-cylinder touring chassis, it can get to cars that are in distress, in a hurry. Three openings into the body give access to all parts of the interior. Side divisions carry tires and complete wheels. The tail cover is a shelter to one working at the back

One of the New Dodge Deliveries, Thirty of Which Have Just Been Added to the Ledger Fleet.

A combination of circumstances caused the Ledgers' change to motor-trucks from horses and wagons. There was the fact that competition with other newspapers tended to make the change favorable; the company had been using fifteen automobiles for the last four years on certain routes with gratifying success; the draft took away a considerable number of drivers and helpers; since the elimination of numerous trains to meet war conditions, wagons were not fast enough to make proper connections to take the papers at various important points; it was necessary to "feed" with circulation the various cantonments in which a big demand for Ledgers had arisen and this could be done more satisfactory with a direct auto schedule and much better time could be made to regularly supplied outlying points.

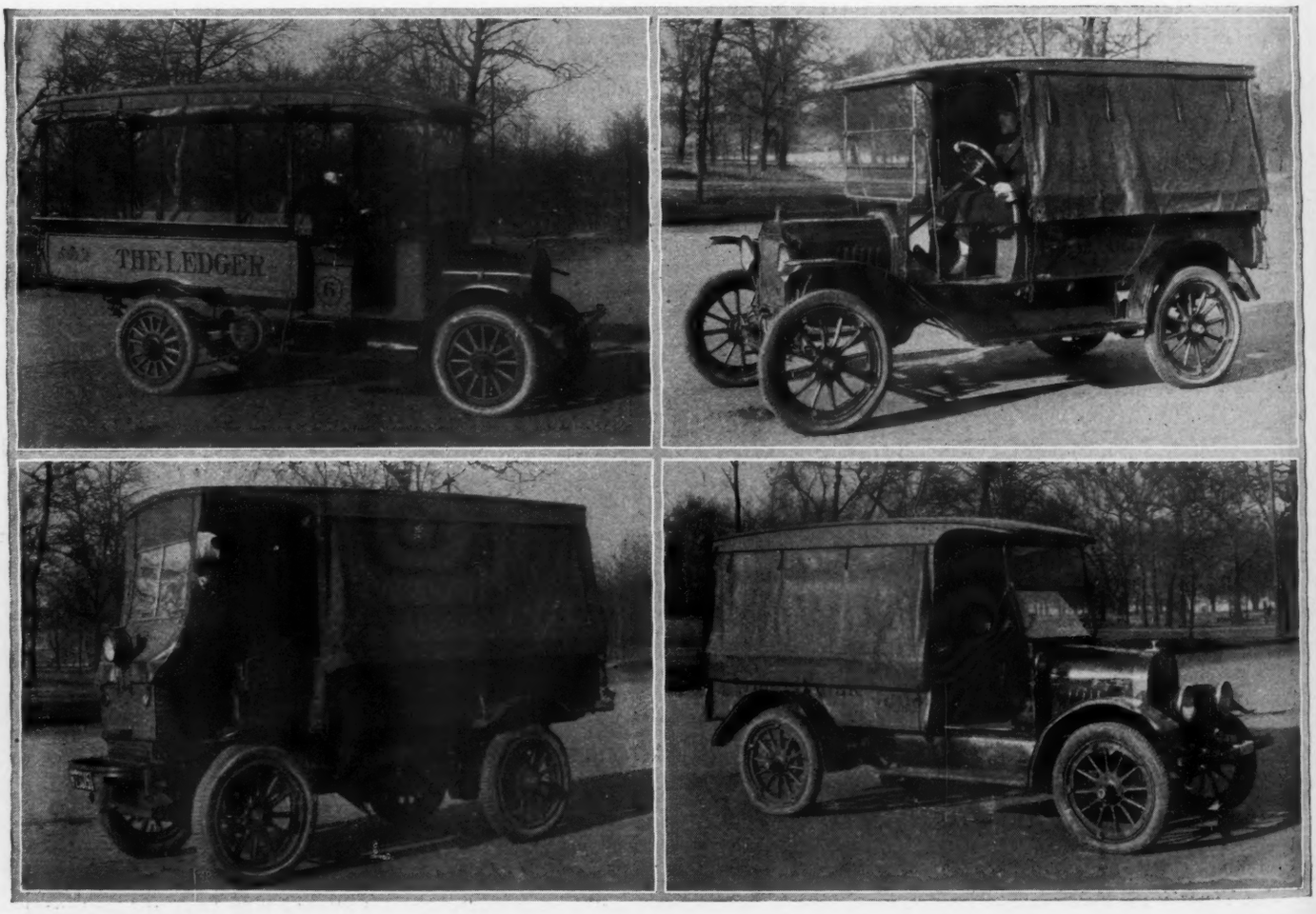
Added to these important considerations —which are bound to apply sooner or later to virtually every large newspaper publishing company in the country and which, therefore may be considered of especial interest at this time—is the fact that horse-drawn vehicle newspaper labor is of the crudest. Out of sixty or so lads and men, sometimes as many as twenty will not be working for various reasons and excuses; there is considerable reckless driving on the wagons of nearly all newspapers and the "greener" labor is careless, horses are needlessly allowed to go lame and minor accidents to the vehicles are apt to be entirely too frequent. All this entails loss of much time and considerable expense, including that of almost constantly hiring and training new workers.

These conditions are common to nearly all newspaper concerns using horse-drawn vehicles for deliveries. The Ledgers were not exceptions in all of these instances. Accordingly, the decision was made to do away with the slower mode of locomotion.

The problem then, was, how to obtain the lightest cars of the most durable construction and tending to the least depreciation under the extraordinary strain of newspaper route work. It was decided to stage a number of "dress rehearsals," so to speak, in order to try out several makes of auto trucks. The machines of four manufacturers entered into the competition for delivery truck work over the routes. The office of the Ledgers carefully checked up results, not only making comparisons with the horse-drawn vehicles, but also "clocking" one company's trucks against another's, with the result already mentioned.

Asked regarding the advantages of the motor-trucks over the horses and wagons, Frank A. Clark, in charge of the Evening Ledger's circulation, said:

"Using motor trucks has the following advantages over horse-drawn vehicles in newspaper circulation work: Of course, better time is made, covering virtually twice the territory in half the time; one machine now does the work of at least two wagons; we not only have a better and more careful type of labor on deliveries,



The Ledger's Fleet, Before the Addition of the Dodges Shown in the Headpiece, Consisted of Nineteen Cars, Among Them Being Autocars, Garfords, Vims and Fords. One of Each is Shown in This Illustration

but it is not necessary to have so many. Where a driver and one or two helpers were used before, now one man often is sufficient and does the work better. Now we have safety of delivery in all kinds of weather. The autos work out better for our supplies and better for the stores and while I am not quoting figures, the expense, in the long run, will be greatly reduced."

It will occur to the public that newspapers sometimes treat themselves with their own medicine and that as an advertisement, too, spick-and-span motor trucks make a much better appearance than horses indifferently groomed as newspaper wagon horses are more than apt to be, as mud will spatter and dust gather under the stress and rush of "making routes." To make or keep an auto presentable under like circumstances is an operation taking much less time.

For newspaper delivery purposes the city is divided into eight districts and at the time for delivering the various editions of the morning and evening papers, motor trucks are stationed for relay work at various given points in these districts, supply cars and route cars co-operating under an exact schedule. Each driver has his route card and private instructions. Newspaper routing mysteries are closely guarded trade secrets and much time and labor are given to perfecting the method. For the Ledgers there are five daily deliveries and the route cars average sixty stops.

In addition to covering Philadelphia and vicinity, the Ledgers' auto trucks supply up-State points, New Jersey, Baltimore, Washington and the various nearby cantonments, such as Camp Meade, Camp Dix and even Camp Hancock, at Augusta, Ga.

The Ledger's Photo Patrol to Take Staff Photographers Quickly to the Scenes of News

Under the new plan, if a route driver punctures a tire on his trip, he is not permitted to stop and mend it. His orders are to telephone from the nearest point to the Ledgers' garage, describing what has happened and a reserve truck, of which ample number is on hand in the garage, is rushed to take him and his load, while the driver of the relief car shifts over and stops to do the mending, then returning that car as a reserve. Should the accident prove a real breakdown, the new service Packard is sped to the rescue, accompanied by the relief car to take driver and load on the route, so no unnecessary time is lost.

A new feature of the Ledgers' delivery system is that everything on the car is locked—hood, governor and everything lockable that will not interfere with locomotion, the driver having only his key to look after. Nobody can tamper with anything and nothing will come undone in the rush along the route. This is a rule insisted on.

The present garage on Taney Street will be vacated before long for a new one in the vicinity of Girard Avenue and Twenty-sixth Street, which will be a model for equipment. The Ledgers' garage does all its own repair work with a competent staff of mechanics and every car is tested before making a run. Fifteen thousand dollars' worth of stock is in the supplies department. Prominently displayed on the wall is an order from Mr. Clark for "safety first" in making runs—a warning and reminder that the public comes ahead of circulation.

The Light and Heavy Type Signal Corps Trucks. They Vary in Specifications From, and Should Not be Confused With, the War Trucks

Upper: Heavy-type Signal Corps truck at the left; right view shows the light type with two heavy type in the rear. Below: Close-up of the light-type Signal Corps truck at the left; a heavy type that had been under water three days and nights and ran perfectly afterward, is shown at the right

Class A and Heavy War Trucks Compared

OUTWARDLY the class A military truck differs very little from the larger model except that it has an internal-gear rear axle. In other respects it is the class B chassis scaled down to less than two-thirds the weight. Three experimental chassis are being built, orders for them having been placed November 17th with the Autocar Co., the White Co. and the Denby Motor Truck Co. The scheduled dates for the completion of these vehicles was December 10th. A new record has been set up in the production of the engine which was tested in Detroit. Owing to difference in size, only a very few parts could be used which were identical with those of the class B engine, so a complete new set of drawings had to be made, new dies cut, new patterns made and so on. From the time this work was started till the engine was turning over in the Continental Motor Co.'s plant, exactly 16 days, 20 hours elapsed. The power and especially the torque obtained from the engine enable it to rank with the class B as a highly successful product. At the governed speed of 1200 r.p.m. the power is 42½ h.p. and at 900 the torque reaches its maximum of 198 lb. ft.

Cylinders Cast in Block

The engine is 4¼: 5½ in., 312 cu. in. and it differs in design from the class B mainly in having the four cylinders in one block and by having mushroom tappets instead of the roller type. The detachable cylinder heads cover only two cylinders each, thus being exactly like the class B except for size. This division of the head casting into two is excellent practice, because the smaller piece is so much easier to handle when carbon scraping becomes necessary.

The valves are large in proportion to the cylinder bore, being 1⅞ in. measured in the clear across the port, and the timing is as follows: Exhaust opens 45 deg. early; exhaust closes 5 deg. late; intake opens 15 deg. late; intake closes 38 deg. late. The valve lift is 5-16 in. for both the intakes and the exhausts.

The manifold layout is precisely that of the class B, this having proved itself one of the best features of the larger truck. The same is true of all the accessories, ignition, generator, etc., and of the method of mounting in the frame. The crankshaft is 2¼-in. diameter throughout, has three bearings and is otherwise like the larger job. A slight point of difference, due to the block cylinder casting, is that the water pump delivers to a single opening instead of to two on the cylinders. Also the fan bracket is attached to the front of the cylinder block instead of to the crankcase. There is an offset on the connecting rods of ¼ in., this allowing the engine to be shortened. Cooling is varied to suit the smaller engine by cutting down the altitude of the radiator 4½ in., using the same top and bottom cast tanks. The reduced length and height give the front of the truck a very compact look.

The clutch takes the same disks as the class B, but has fewer of them, 14 surfaces as against 18. It is inclosed in the same way, and the gear control with the brake lever, which mounts on the bell housing, in identical with the class B part.

Similarly the transmission looks just like the class B only smaller. It has four speeds and is hung in the frame the same way, with a slight difference at the rear. The back end of the aluminum case is machined on a circle like the face of a bell housing, and a steel forged ring is bolted thereto. On this forging are the lugs through which the frame attachment bolts pass and also the anchorage for a transmission brake. This is an extremely clever piece of design because it insures absolute concentricity between the brake and its drum while no braking stresses can possibly be put upon the transmission case, since they pass directly from the brake shoes to the frame via the steel ring. The brake is a very powerful one, 7 in. diameter and 6 in. wide. It has two external shoes, contracted by a cam action, similarly to the brake used on the Riker truck. The shoes are easy to remove for relining and equally easy to adjust for wear. Between transmission and engine there is a universal shaft, and this is inclined a little; the transmission is tilted a little to correspond, with the object of dividing up the angularity between the two joints in front of the transmission and the two back of it in equal ratio.

Internal-Gear Rear Axle

It has already been stated that the rear axle is internal gear driven. It is, however, an entirely new design and appears to be one of the neatest. It is not heavy; the brakes are completely protected from lubricant that might escape from the gear and the accessibility of its details is remarkable.

The weight-carrying member is a pressed steel "banjo" with steel tubes forced into the ends, very much like the regular Timken passenger car axle. At each end the steel spring tables are rigidly attached, and these carry the driving pinion bearings and the brake anchorage.

Behind the pressed steel case is the differential, this being carried in a steel casting which is inserted from the front of the pressed steel part. This casting holds the bevel pinion and all the bearings. A light cover, removable from the back, incloses the whole assembly. The differential can be removed from the rear without disturbing the bevel pinion, or the whole can be taken out from the front without tearing down the whole axle. After taking off the road wheels the drive shafts can be withdrawn, as they fit into the differential on splines.

It is not easy to explain the way in which grease is kept from the brakes without a photograph of the axle which is not yet available. The hub is a casting and has bolted to it, by the same ring of bolts, both the ring gear and the brake drum. The latter is much larger in diameter than the gear and much deeper, so it completely covers the drive. The gearing is inclosed as tightly as possible, and is nearer to the wheel than the brake. The drum has its largest diameter right in line with the joint in the gear casing, being smaller on the actual brake surface, and this gives a sort of annular pocket back of the brake which would catch any lubricant exuded from the gear. A ring of holes is drilled to allow escape of any such grease or oil. Any which gets out of the gear will be flung to the largest diameter of the drum by centrifugal action, and hence it will be thrown off outside the brake.

Naturally the gear ratios are a little higher than on the heavier truck. The direct drive is 8.4:1, the others being respectively, 14.3, 32.4 and 42.5:1. Tires are 36 x 7-in. rear and 36 x 4-in. front.

New Spring-Bolt Lubrication

As on the B truck, Hotchkiss drive is used, the rear springs being 56 in. long and on the front ones 42 in. Both are divided in the center. There is a new system of spring bolt lubrication somewhat simpler than that used on the class B. The spring eye is bushed, the shackles and brackets are also bushed and instead of the usual spring bolt, a piece of steel tube is pushed in, free to turn either in the spring eye or in the shackle. This is prevented from endwise movement by a small bolt which goes right through and clamps the whole together.

On the inner end, this bolt secures a plain cap, sealing the end of the tube, but on the outer end the bolt holds up a little oil box. This is a casting with a small reservoir below the level of the spring eye and there is a small splash plate above, the idea being that oil will be thrown up by vibration on the plate, whence it runs into the spring supporting tube and so to the bearing surfaces. Overfilling the reservoir will flush the whole unit, washing out dirt and old oil. This is the sort of thing that in normal times would be patented and marketed as an accessory and is an excellent sample of how several engineers getting together can perfect a detail.

There is little else about the truck which is different from the large one. It has all the same equipment, the same fuel feed from a dashboard tank, the same steering, scaled down of course, the same frame design. It will not have the four man seat, only two men being carried. The wheelbase, by the way, is 144 in.

The work of the design has been carried out under the direction of General Baker, by B. B. Bachman, chief engineer of the Autocar Co.; E. E. Wemp, chief engineer Denby Motor Truck Co., and A. J. Scaife, chief engineer of the White Co. For the detail working out of the engine, W. A. Frederick, Continental Motors Co., was responsible.

Car Makers Offer Their Aid to Government

Manufacturers Vote to Support Automobile Industries Committee. Factory Organizations to be Kept Intact

At their meeting in Detroit last week in answer to a call from the National Automobile Chamber of Commerce, more than 150 automobile manufacturers voted unanimously to support the work of the automobile Industries Committe at Washington, pledged to the War Industries Board and the War and Naval Departments their heartiest support and to a man expressed their readiness to turn over the vast productive facilities of the industry to the Government as fast as the Government can make use of them. In the meantime, automobile makers will keep their organizations intact so as to conserve the greatest possible potential strength for the present and future war programs of the Government. President Charles Clifton, of the N. A. C. C., presided, with every prominent company in the industry represented and also representatives of the Motor & Accessories Manufacturers' Association.

It was very clearly shown that the Washington authorities had no intention of arbitrarily cutting off the automobile business and that automobile men themselves have offered to reduce passenger car production according to the Government needs for war materials or as the Government may require the facilities of the automobile and accessory manufacturing companies. The heartiest response to the committee's efforts has been received from the War Industries Board and from the Army and Navy Departments.

Manufacturers appreciate that business cannot be entirely as usual during the war, as the principal business now is making war and not making automobiles, hence the industry cannot expect to increase production as in the past.

The manufacturers attending the meeting were surprised at the great number of automobile men in the service and the spirit of co-operation which has been shown by the makers giving their best men to the Government at great sacrifice to themselves and their plants.

It is realized that rather than give munition orders to companies which have to buy new machinery and build new plants, advantage should be taken of the productive capacities of the automobile and parts plants. An immense amount of war work is being done and preparations are being made to take over more work for the Government.

A. W. Copland and Hugh Chalmers, of the Automobile Industries Board, who, with John R. Lee, were appointed to coordinate the Government war requirements with the facilities of the automobile industry, explained the work going on at Washington. Their need for additional engineers was promptly answered by nine manufacturers volunteering the services of nine of their engineers to work with the committee at Washington for the period of the war.

It was felt that selling transportation for millions of people and thousands of tons of freight as supplied by the modern motor car and truck, coupled with the War Railroads Board's request for greater motor transportation to relieve the railroads of short haul traffic, demands continued productive facilities in the industry, now rated as third among those of the United States.

By unanimous vote of the meeting the following telegram was sent to Daniel Willard, Chairman of the War Industries Board, at Washington:

"The automobile industry as represented by more than 150 manufacturers in session here today volunteers its hearty support to our Automobile Industries Committee in Washington and pledges to the War Industries Board and the War and Naval Departments their heartiest support and to a man expressed their willingness to turn their facilities over to the Government as fast as the Government can make use of them. In the meantime we hope to keep our organizations intact so as to conserve the greatest possible potential strength for the present and future war plans of the Government."

Loyal support by 27,500 dealers was indicated by reports from different sections of the country expressing their willingness to help win the war by rearranging their organizations for the new situations created. The automobile men expect to make cars to as near a normal number as the materials and coal situation will permit, but it may be expected that there will be some decrease in the number of passenger cars produced, making them harder to get and higher in price.

Atlas Ambulances for Red Cross

Eight specially constructed Atlas ambulances have been presented to the New York Chapter of the American Red Cross. They were built by the Martin Truck and Body Corp., York, Pa. Three were presented by Mr. and Mrs. George G. Foster, of New York. The others were donated by Albert B. Ashforth, Mrs. William E. Reis, Mr. and Mrs. W. T. Graham, New York City, and W. L. Ward, of Portchester, N. Y., all of whom are active in charitable work.

The eight ambulances have been attached to the New York General Hospital, located at Columbia University, and are now being used in conveying sick soldiers from Yaphank and other training camps within the metropolitan district to the base hospital. Later these ambulances will be used in transferring sick and wounded soldiers from the transports to the hospitals.

Their equipment is complete in every respect in accordance with the standards adopted by the American Red Cross and the United States Army. Provision is made in the lockers beneath the seats for carrying the equipment of a full complement of ambulance attendants. Lockers are also provided for carrying medical and surgical supplies as well as an emergency drinking-water tank.

These ambulances, in addition to the many unusual advantages which have been incorporated in the specially constructed bodies, retain all of the standard features of the regular Atlas ¾-ton trucks, including electric self-starting and lighting.

Eight Atlas Ambulances Contributed by New Yorkers to the American Red Cross

Statistics of the Automobile Industry

How It Draws Upon Other Industries and What It Involves in Number of People Employed, Capital Invested and Value of Output

TO show how closely the automobile industry is related to many other industries of the country and how many associated businesses are directly dependent upon the manufacture and sale of motor cars, the National Automobile Chamber of Commerce has prepared the chart shown herewith.

Raw materials produced by the industries shown in the top row of circles are drawn upon by the trades shown in the second row for the production of fabricated and partly manufactured materials used by makers of automobiles, automobile parts and accessories. The consumption of such materials by the industry amounts to $300,000,000 worth yearly.

There are 1080 parts and accessory makers, having an invested capital of $336,000,000. They employ 320,000 workers and pay $288,000,000 in wages annually. Tire makers alone produced 18,000,000 tires during the fiscal year ended June 30, 1917, valued at $450,000,000. Nearly half of these were bought by car manufacturers to equip new cars produced during the year.

The automobile and truck manufacturers are the hub of the industry and are located in the central square. They draw the parts and materials that enter into the construction of complete motor vehicles from the parts and accessory makers and also directly from the manufacturers of many raw and partly fabricated materials. In the twelve months ended last June they paid $480,000,000 for parts and materials.

There are 550 manufacturers of passenger and commercial cars, with factories located in 32 states of the Union. They have an invested capital of $736,000,000, employ 280,000 workers and pay $275,000,000 annually in wages and salaries. During the fiscal year ended June 30, 1917, they produced 1,806,194 motor vehicles of a gross wholesale value of $917,470,938. Exports of motor vehicles alone during that period amounted to more than $90,000,000.

Manufactured automobiles and trucks are sold by the factories to distributors and dealers and direct to users. Sub-dealers buy from distributors or wholesalers and most of the users buy from dealers and sub-dealers. There are 2800 distributors with $41,000,000 invested capital and 28,000 employes, to whom $25,200,000 is paid in wages annually.

Retail dealers scattered throughout every city and village in America number 25,000.

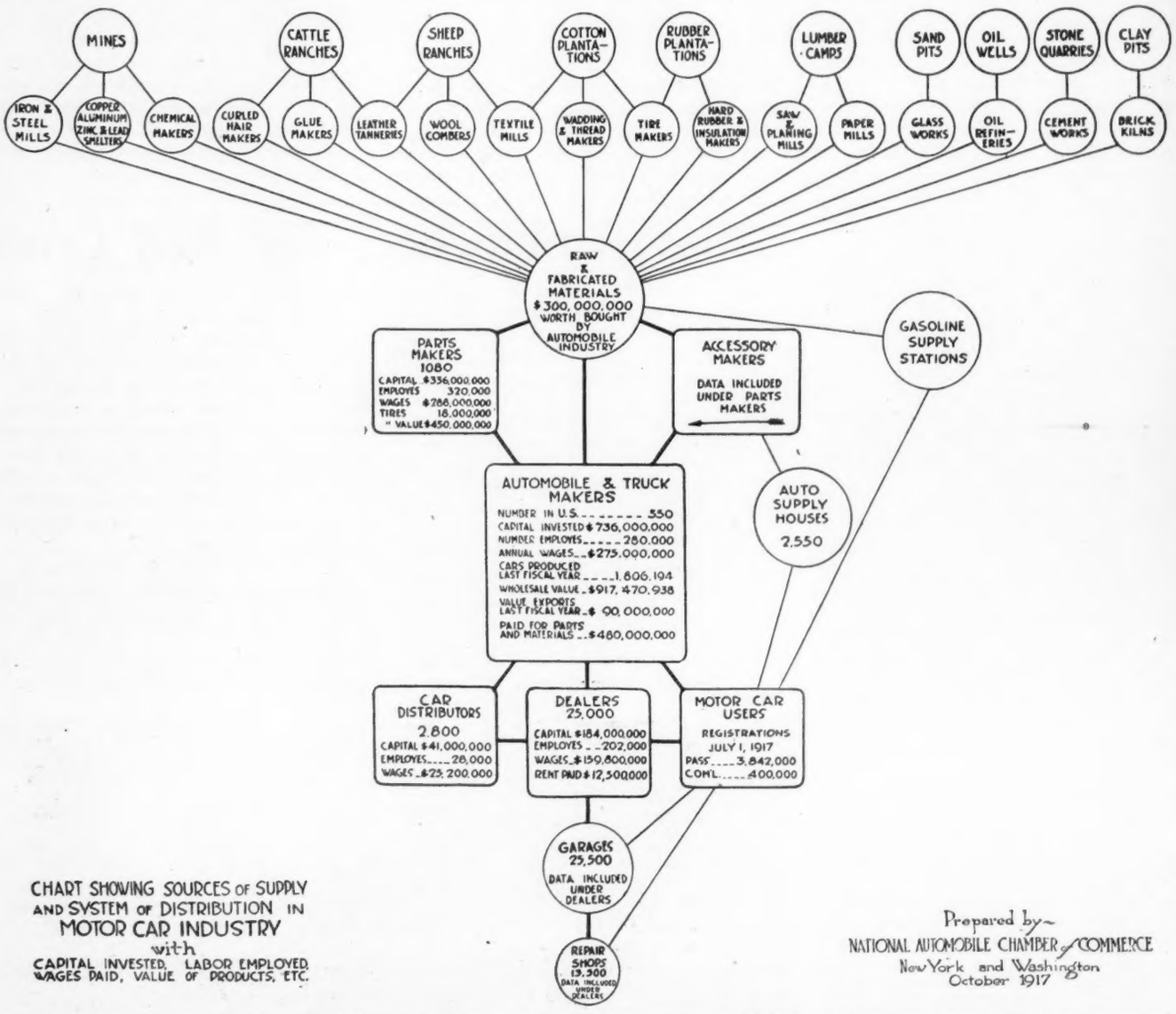


CHART SHOWING SOURCES OF SUPPLY AND SYSTEM OF DISTRIBUTION IN MOTOR CAR INDUSTRY with CAPITAL INVESTED, LABOR EMPLOYED, WAGES PAID, VALUE OF PRODUCTS, ETC.

Prepared by— NATIONAL AUTOMOBILE CHAMBER of COMMERCE New York and Washington October 1917

Their invested capital amounts to $184,000,000 and they employ 202,000 salesmen, repairmen and other help, to whom $159,000,000 is paid yearly.

Most of the garages and repair shops are owned and operated by dealers and distributors and the statistics for them are included under dealers, although there are many independent garages and repair shops not connected with car agencies.

On July 1, 1917, there were 4,242,800 registered automobile owners in the United States. About 400,000 of the registered vehicles were commercial cars. After purchasing their cars from the dealers or from manufacturers direct, these owners store their cars in public garages, have repairs made in the repiar shops, buy tires, supplemental equipment, automobile clothing, etc., from the 2,550 supply houses, which draw their stocks from the accessory makers, and purchase large quantities of gasoline from innumerable gasoline stations, which in turn secure their gasoline direct from the oil companies.

It will be seen from this chart what an interdependent business the automobile industry is, how it helps support dozens of other important industries, that it is the sole dependence of 27,800 distributors and dealers, and provides a livelihood for nearly 1,000,000 employes with their families.

With thousands of parts entering into the construction of each motor car, the inability of the manufacturers to get any essential part will delay production and may even stop it entirely. A serious delay or reduction of production in the late winter is almost sure to turn a season that ordinarily would have been profitable for the distributor and dealer into one of financial loss and even failure.

When a prominent automobile manufacturing company fails, it always involves a number of materials and parts makers, who are large creditors, and seriously affects several thousand local dealers. Many of these dealers handle only the one make of car and their business is entirely dependent upon its sale. When the makers fail, the dealers cannot secure the agency for another good car often for many months, as the other makes already are contracted to other dealers in the same city.

The relationship and interdependence in the automobile industry are much closer and more intricate and delicately adjusted than can be indicated in a diagrammatic chart. Sometimes large car manufacturers have to finance the makers of some particular part to insure obtaining it in the quantities and at the times required. On the other hand, engine, axle and tire manufacturers often have to extend credit to a car manufacturer through the heavy manufacturing season in the winter until payments for the finished cars come in.

So dependent and delicately adjusted is the industry that no section of it nor hardly any individual unit can be vitally affected without having a disturbing influence on other elements both inside and outside of the immediate industry.

The Motor Truck in Bakery Service

The Berhalter Health Foods Company of Chicago, Started Right; for it Never Had Horse-Drawn Delivery Wagons

By GEORGE BROWN

IT IS SAFE to say that a business of more than a very few years' existence that has always had motor delivery service is unique. The following deals with one in which the horse never was a tractor.

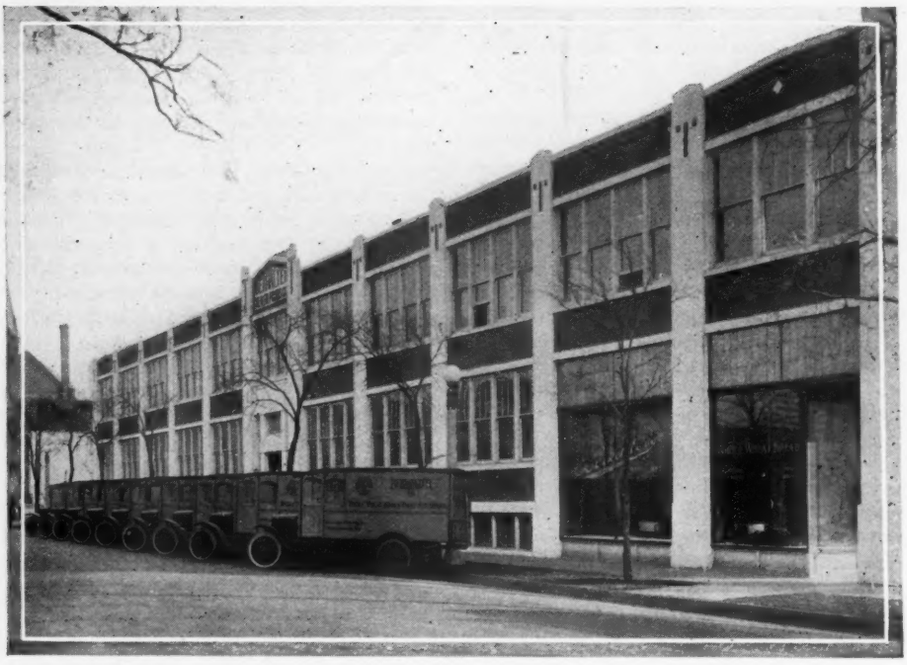
Nine years ago Anthony Berhalter and his wife, Katherine, together with another partner who withdrew at the end of seven months, opened a store, or rather a bakery, at 309 North Ave., Chicago, for the production and sale of Berhalter Health Foods which are made of whole wheat, in line with the movement for un-denatured foods. They began creating a demand for the new product in Chicago, which twenty years of research convinced them afforded a promising business opportunity. Their combined capital was just $1700. Their sales in the first month of their business career averaged around $2 daily. The second month their products captured popular favor to the extent of an increase to $10 per day, and now, with a meager advertising appropriation, but with a splendid reputation for quality production, their receipts are over $600 daily.

Although this is a motor truck story, it seems necessary to digress from power haulage for the interest at least of the master baking fraternity to show how commercial cars have been so important in the development of a business which in nine years has increased from the small beginning mentioned into an establishment with a baking equipment that may be exceeded in size by a few, but certainly none is more modern in its facilities.

In 1913 the extensive delivery of Berhalter products had become so great that the question of haulage was answered by the purchase of an Overland delivery truck. It was kept busily engaged in supplying the demand emanating from the North Avenue store, as well as the store or station that that had by now opened on the south side of Chicago at 132 East 43rd St.

Two years later a Ford, equipped with a delivery body, was bought to care for the trade growing so rapidly with grocers, restaurants and delicatessen stores. A year still later a Republic motor truck of 1½ tons capacity was added and then Berhalter began talking about his motor-truck fleet. It was a profitable beginning, as these fleet-forerunners are still doing business daily and regularly.

In 1914 the increase of business was so rapid that the Berhalters purchased ground at 1423 North Clark St., on which they erected a handsome three-story brick, sanitary bakery in the rear and in front a sales-



The Berhalter Plant on Diversey Parkway, at Herndon Street, Chicago. Retail Salesroom at Right, and Kissel Motor Truck Fleet in Left Foreground

room, which even now is one of the most attractive bakery show places of Chicago. They completed and occupied this building believing it ideal in its equipment for their business, as well as a desirable family-trade center. They little dreamed that the business to result from the success of their products had nowhere near reached the crest. Thus it proved, however, for it made such strides that they not only nad to increase their motor-truck fleet, but provide still larger quarters and the present modern plant at 1301-1325 Diversey Blvd. was completed last November at a cost of $250,000.

Throughout their progress the Berhalters did not neglect the important item of delivery, which, as early as 1914, was assuming the magnitude of a real problem and by 1916 business had increased so rapidly that they spent much time during a period of several months trying to find a model delivery truck suitable for their business, the purchase of a sufficient number of which would constitute a really capable motor-truck fleet. Their investigations took them even to the factories until at Hartford, Wis., at the Kissel Motor Car Co., they found in the 1¼-ton Kissel motor truck chassis what they were convinced was the most suitable for their service and a contract followed for ten of these commercial cars, which have since been delivered and are now in commission.

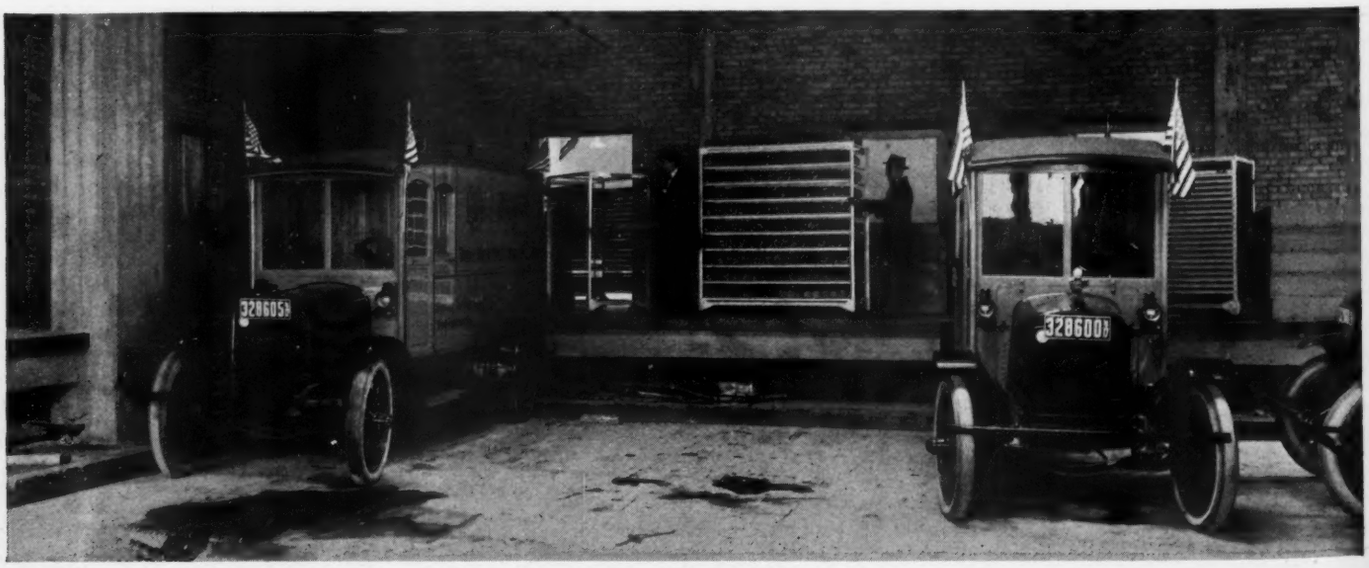
For the body equipment a contract was made with William Schukraft & Sons for a specially designed body with an ornately decorated exterior combined with an interior of modern and sanitary type. The salesmen's ideas and suggestions were invited and together with the body builders and designers a suitable arrangement for the bakery loads, as well as the driving comfort of the chauffeur-salesmen was provided for. Over $2000 was spent in this effort with a view to making it a profitable commercial delivery investment. As a result of this collaboration each truck interior is a combination of pie, pastry and bread delivery vehicle; pies are held in place in the front part of the body on separate racks, each single piece secured in place by an ingenious device to prevent them, through road jolts, coming in contact or marring their appearance. The rear end of the body consists of four shelves, each in three pieces, with a capacity for 300 pies and 1000 loaves of bread, the latter weighing 1¼ lb. each. Ample space is also afforded for various shapes and kinds of pastry products. These trucks are very attractive externally also and are painted and lettered in a way that will draw attention to the products and serve as moving advertisements of the business.

The motor-truck service is to care for deliveries in Chicago's metropolitan district only; this means north to Waukegan, west to Elgin and Aurora and to the industrial cities in nothern Indiana, Hamilton, Gary and East Chicago, with numerous villages and small towns intervening.

The bakery structure is cement, glass and tile, with a loading room for a large fleet of motor trucks on the street floor, the dimensions of which are 56 x 55 ft. and 20 ft. high. Around two sides of this room a 6-ft. wide cement loading platform extends, where the bakery products are delivered to the trucks sanitarily and expeditiously through sliding steel doors from the stock rooms.

The cost of operation figures are impossible to secure for this fleet of Kissel motor trucks as their service at the time of the preparation of this article for the COMMERCIAL CAR JOURNAL had extended no further than a parade of the ten cars.

The Berhalter Health Foods Company is headed by Anthony Berhalter, president; Mrs. Katherine Berhalter, vice-president; A. W. James, treasurer, and Dr. Robert T. Aiston, secretary. The officers, together with Dr. Robert F. Minor, compose the directorate of the company. F. D. Cummings is manager and to his executive ability much of the success of the enterprise is due.



One Corner of the Loading Room and Platform, Showing Rolling Racks for Transferring the Goods From the Bakeshop to the Trucks

THE COMMERCIAL CAR JOURNAL

Entered as second-class matter at the Post Office at Philadelphia, Pa., under the act of March 3, 1879

Vol. XIV. PHILADELPHIA, DECEMBER 15, 1917 No. 4

Published the 15th of each month by the

CHILTON COMPANY

Market and 49th Streets Philadelphia, U. S. A.

JAMES ARTMAN, President C. A. MUSSELMAN, Treas. & Gen'l Mgr.
GEO. H. BUZBY, Vice President A. H. VAUX, Secretary

ADVERTISING DEPARTMENT

Eastern Mgr., C. MONROE SMITH, New York
Western Mgr., C. C. McKINNEY, Chicago
Ohio and Indiana Mgr., GEORGE H. DUCK, Cleveland

EDITORIAL DEPARTMENT

JAMES ARTMAN, Editor in Chief
E. S. FOLJAMBE, Managing Editor
H. R. COBLEIGH, Technical Editor
ALBERT G. METZ, Ass't Managing Editor

SUBSCRIPTION RATES

United States and Possessions	$1.00
Canada	2.00
Foreign	3.00

Make Checks, Money Orders, etc., payable to Chilton Company

Change of Address — Subscribers desiring their address changed, should give the old as well as the new

The Commercial Car Journal is a member of the Audit Bureau of Circulations

Let's Make a Fresh Start in 1918

ANY DAY of any month is a good time to begin over again, to take a fresh start and try to be a more efficient business man, and most of us do turn over new leaves from time to time without waiting for New Year's day to come along.

The beginning of the New Year, though, is a time when new resolutions are the popular thing. Everybody thinks then of turning over a new leaf. It is natural to want to do more business and a more profitable business during the coming year than was done the past year. The air is full of the flutter of the new leaves.

There is a kind of satisfaction in throwing the mistakes of 1917 into the discard and starting over with a new deal. This January, instead of making the same old resolutions we have made every January, only to forget them before the January leaf is torn off from the calendar, let's make some resolutions that we can stand by, that are not beyond our reach and then let's keep those resolutions uppermost in our minds until they become achievements, something we have done rather than merely something we are going to do.

A good many of the things we tried to do in 1917 we failed to put over. Some of those things we tried again and again and finally, becoming discouraged, we gave up trying. Let's consider whether those things were within the bounds of possibility for us and if not let's substitute something more practical in their places.

Any way 1917 is all water that has gone under the bridge. Conditions will be different in 1918. Some of them will be better; some will be worse. Let's adapt our resolutions to the situation as we see it. Let's be very careful in making the resolutions and then let's be bull dogs for hanging to them when made.

We don't know what your 1918 resolutions will be. We suppose you will resolve to study up Salesmanship, so as to use more intelligent, more scientific methods of reaching and convincing prospects. We assume you will make up your mind that it is a mistake to laugh at scientific salesmanship and admit that nothing is more practical and workable than a sound theory.

You will naturally resolve to save more money the coming year and you will decide that it is up to you to be more helpful to the Government in war times, so you will work hard to conserve material things and plan to help on every bond issue as it comes along.

You will see what you can do to help prevent the waste of gasoline and oils, and you will try to operate your business more efficiently to save labor and make it possible to do more work with less men. Of course you will feel a double interest in pushing the sale of trucks where the use of one is going to release men and power, railroad cars and other forces for the use of the Government. There never was a time when the truck agent had this wonderful opportunity to serve the Government, his prospective buyers and his own interests all at once.

Of course you will plan to give more attention to your trade journal during the coming year. Probably you can look back and see instances where you might have done more business or made more money if you had been possessed of information that was all the time waiting on your desk in the pages of this or some other trade publication. You cannot expect to attain high efficiency in business without reading the literature of the trade. Trusting to the chance of picking up as you go along all the knowledge you need is leaving too much to chance.

Just resolving that you will use better selling plans will not supply you with the plans. They must be found somewhere—in your head or elsewhere. It is reasonable to suppose that you will have better plans available if you pick up all you can find that have been used by others, as well as using those you figure out for yourself. Of course, the journals of the trade are the best place to find such plans.

One more resolution we would like to see you make is this:

Resolved, that I will write to my trade journal about any good and successful plan that I use, so that others may profit by my experience, for, if I send in my good ideas, others will be the more likely to send in theirs and it will thus help me in return.

Here's hoping you will choose wise resolutions and stick to them. If you do, no one need wish you a better business, you will get it anyway.

The Commercial Car's Opportunity

NEVER in the history of the industry has the commercial car had such a wonderful opportunity as now. The war has created this opportunity because it has shown the insufficiency of the railroads in time of emergency to care for a suddenly increased demand for transportation. Carriers requiring rails for their operation obviously lack in flexibility. Motive equipment requiring only a reasonably good roadbed is free to go almost anywhere. Moreover, the materials for improving roads and extending them whithersoever they may be needed are provided by Nature and are at hand nearly everywhere with little work necessary to prepare them for use, whereas rails must be manufactured from raw material, invariably requiring transportation from its source to the point where it is converted into rails and these again must be shipped to the point of use. When rails are most needed is just the time when track already laid cannot be spared for use in the hauling of new rails. Again the rails are made from steel that is needed for too many other purposes in war time. Roads are constructed from nothing that is otherwise needed for warfare. Every advantage is in favor just now of the commercial car.

Thus it is that the war has revealed as never before the value of the motor truck to the business and industrial world generally. Its military value has naturally been much more directly demonstrated and so strikingly that now effective waging of war without the motor truck would be impossible. Marvelous advances have been made in the means and methods of carrying on warfare such as highly developed arms and armament, the introduction of entirely new agencies, the submarine and airplane and with them radical changes in military science, but what would all of these amount to without the services of the army truck and motor ambulance? The tanks, another new weapon, and tractors for hauling field artillery are in effect motor trucks of a specialized form.

Moreover, the motor truck's usefulness is not confined to the vicinity of the battlefield. It plays a most essential part in bringing up supplies to the front, making it possible to maintain enormous armies in fighting trim, but equally indispensable in the light of present knowledge is the function it performs back at the source of supplies in handling the materials that go into munitions and the finished product to the point of shipment.

Then, separating in one's thought all that pertains directly to the military activities, consider the vastly enlarged scope of the motor car in commercial applications that freight congestion has so strongly emphasized and in filling which the lightest delivery car, as well as the heaviest truck, is indirectly aiding Liberty's cause either by releasing some other carrier for war work or making possible the prosperous conduct of peaceful business that money, the very backbone of the war, may be available.

We are living in a wonderful period of history, industrial as well as political, and in the former aspects there is nothing that approaches in significance what is transpiring in the commercial car field. It has been projected by the international conflict years ahead of the development it would otherwise have experienced. For first place in industrial economy it looms as the strongest candidate. Those in this field or expecting to be, cannot afford to neglect diligently reading and studying the progress being made. The best informed are as yet bewildered and none can predict what the future holds for motor transportation.

While hating war as bitterly as all must who have a particle of humanity in their make-up, the optimists cannot help appreciating certain benefits that are to be the outcome; not the least of these is the demonstration that the solution of the transportation problem is the commercial motor car.

We Must Take Heed to the Roads

THIS publication is not a "good roads" paper. At least, not primarily. Incidentally it is bound to be interested in that subject. Can the upper do without the sole of the shoe or the most beautiful edifice exist without a foundation? Commercial cars with nowhere to operate would be as useless as music with none to hear or the proverbial candle hidden under a bushel.

In the preceding editorial we have merely hinted at the enormous expansion just beginning and bound to continue in the field for motor transportation. But it will be nothing like as rapid as it should be if our system of suitable roads does not keep pace. City work is fairly well in hand as far as roads are concerned; the principal handicap there is traffic regulation, but that is being studied and developed so that relief is in sight.

Thus far interurban service from motor trucks has received least attention. Its possibilities have only begun to be realized and it will shortly take on an importance transcending any other class. We are only as yet in the "A, B, C's" of highway freight transportation, but we are getting educated fast and if the road builders do their part another decade will see this country covered with a net work of good roads alive with moving commercial cars.

As we have the opportunity, let us who are in the rolling stock department lend all possible encouragement to those in the maintenance of ways division. A little prodding of our legislators will have its effect. The state engineers are already doing all their appropriations will permit. When it is understood that it is to the interest of each commonwealth to try to outdo all others in providing the most and the best hard smooth highways and so attract industries to locate within its borders, it will only remain for the commercial car builders to key up their production so that they can fill orders.

Yes, we are interested in "good roads."

Keep the Tractors Working and Become Acquainted With Them and Their Owners

THE small town garageman has a golden opportunity right now to build business for the future for himself and at the same time give a definite service to Uncle Sam this winter and next spring. He should make sure that every tractor in his vicinity is in good working order and stays on the job producing food for the Sammies we are sending abroad and for the folks left behind.

He can do this at a profit and at the same time cinch the farm tractor business of his section for himself—and the motor farm tractor business will be the biggest branch of the motor business.

Here is the point—if a farmer has 160 acres of land, 40 of those acres, instead of yielding food for humans, are furnishing food for the horsepower necessary to farm the other 120. That is a straight food waste. And a tractor will plow this farmer's land at one-third the cost of horse plow-

ing—that is an economic waste. And the average tractor will replace four to six horses and one or two farm laborers for other work—that is sense and efficiency.

But the tractor must keep working.

The tractor motor works harder, under heavier strains, than any automobile or truck motor. That means that it will need repairs, and the average farmer is not an expert on taking care of such a machine. Because he doesn't know how, he is very likely to get into trouble with his tractor, run it into a fence corner and leave it there.

For the man who has been through the early days of the automobile and truck game—here is a new one. Let him get out on the farms, find out what is the matter with the tractors or the farmers, show the latter how to care for their machines and then sell them the idea of a thorough overhauling before next spring's work.

They will need new piston rings, probably clutch lining, spark plugs, straight on down the list, and will be the biggest customers the dealer ever had, so it will pay to cultivate them.

Of one thing the dealer should make certain, that neither he nor his employees knock any tractor they may not happen to like, however much it may deserve it. The farmer paid his good money for it and is trying to do a good job of power farming with it. The repair man should do all he can to keep it going for him and try to keep him satisfied. Then when the farmer has had all the good he can get out of it, and through no fault of the farmer's or the dealer's the tractor is ripe to be junked, the dealer should sell him a new one, one as good as the truck he has been selling.

Here is the biggest opportunity that has come the dealer's way since the motor car—power farming. That means FARM MOTORS. Trucks, tractors, gas engines and their accessories on the farm.

By going after the repair work on these old machines the dealer will become an expert and it is this knowledge that will be of the most value in selecting the tractor he wishes to sell.

He will also have made many friends among the farmers and built up a reputation that will bring the business to him quickly.

Metal and Rubber Markets

Steel Supply is Short

With a decided scarcity of iron the pressure on the mills to meet the growing demand for steel is increasing. The quantity of steel needed for Government use is simply enormous and although this demand is being met, the allotment to outsiders is being curtailed to a degree that is beginning to hurt. The inability of the mills to meet the demand for steel is due to the coke situation and transportation facilities. The scarcity of coke is preventing many of the steel mills from operating their own iron furnaces, consequently they have been forced into the outside market, which is also in the same fix. The big issue with the steel mills is to get coke, iron and labor. Quotations on December 7th were:

Steel Products Prices

Bessemer billets, per ton, mill	$47 00 a .....
Open hearth, per ton, mill....	44 50 a .....
Forging billets, per ton, mill.	60 00 a .....
Sheet bars, per ton	51 00 a .....

SHEETS

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—	
Nos. 3 to 8.....	$4 20 a .....
Nos. 9 to 10.....	4 25 a .....
Nos. 11 and 12.....	4 30 a .....

No. 17 and lighter gauges are based on $5.50 a $7.50 per 100 lb. for No. 28 Bessemer Black sheets.

Box Annealed Sheets, Cold Rolled—	
Nos. 17 to 21.....	$4 80 a .....
Nos. 22 and 24.....	4 85 a .....
Nos. 25 and 26.....	4 90 a .....
Galvanized Sheets of Black Sheet Gauge—	
Nos. 10 and 11.....	$5 25 a .....
Nos. 12 to 14.....	5 35 a .....
Nos. 15 and 16.....	5 50 a .....
Nos. 17 to 21.....	5 65 a .....
Nos. 22 to 24.....	5 80 a .....
Nos. 25 and 26.....	5 95 a .....
Tin—Mill Black Plate—	
Nos. 15 and 16.....	$4 80 a .....
Nos. 17 to 21.....	4 85 a .....
Nos. 22 to 24.....	4 90 a .....
Nos. 25 to 27.....	4 95 a .....

IRON AND STEEL AT PITTSBURGH

Bessemer iron	$37 25 a .....
Bessemer steel, f.o.b. Pittb'h.	47 50 a .....
Skelp, grooved steel	2 90 a .....
Skelp, sheared steel	3 25 a .....
Ferromanganese (80 per ct.).	250 00 a275 00
Steel, melting scrap	23 50 a 24 50
Steel bars	2 90 a .....
Manganese ore, per unit.....	1 00 a .....
Wire rods	57 00 a .....

Prices on Finished Products

Demand continues heavy for all manufactured metal lines and factories; mills and brass foundries continue active. There is more stability to the market, now that the price of copper is more certain, but as yet manufacturers do not quote except on specification. Following prices for brass and bronze products are nominal:

Sheet zinc	$19 00 a .....
Sheet aluminum, 1917 contract	42 00 a .....
do, outside market contracts.	65 00 a 75 00
do, outs. market prompt shpt	75 00 a 80 00
Aluminum wire, outside market prompt shipment	70 00 a 75 00
Copper wire	29 00 a 31 00
Sheet copper, hot rolled	33 00 a 35 00
Sheet copper, cold rolled	34 00 a 36 00
Copper in rods	36 00 a 37 00
Copper wire	28 00 a 31 00
High brass sheets	28 75 a 30 75
High brass wire and light rods	26 75 a 28 75
High brass heavy rods	27 25 a .....
Low brass sheet, wire and rods	31 25 a 34 00
Bronze sheet, wire and rods...	50 25 a 50 50
Brazed brass tubing	35 87 a 37 87
Brazed bronze tubing	41 25 a 43 25
Seamless copper tubing	39 50 a 42 50
Seamless brass tubing	36 50 a 40 50
Seamless bronze tubing	48 00 a 49 00
Full lead sheets	9 25 a .....
Cut lead sheets	9 50 a .....

ALUMINUM.—The market for aluminum is steady and unchanged at from 37c to 38c for No. 1 virgin 98 to 99 per cent.

TUNGSTEN.—An active demand for spot goods, consequent to fear of delay under the new import license regulation, has been followed by a period of dullness which can in part be attributed to railroad embargoes on shipments leaving New York. Unless they have assurance of reasonably prompt delivery, buyers prefer to stay out of the market for the time being. Prices are without quotable change, averaging from $23 to $26 for wolframite and $27 for Scheelité.

Prices on Old Metals

Copper—	Cents per lb. Buying.	Selling.
Heavy cut & crucible.	23.50a.....	24.67a.....
Heavy and wire	21.00a21.50	23.00a23.50
Light and bottoms ..	18.50a19.00	21.00a21.50
Heavy machin. comp..	21.00a22.00	23.00a24.00
Brass, heavy	14.00a14.50	15.50a16.50
Brass, light	11.00a11.25	11.75a12.00
Lead, heavy	5.75a 6.00	6.25a 6.37
Tea lead	5.00a.....	5.75a 6.00
Zinc scrap	5.50a 5.75	6.50a 7.00

The buying prices are those which the larger dealers will pay; the selling prices are market quotations.

Rubber Market Weaker

Since our last report a perceptible drop has been noted in rubber prices. Up-River fine and Ceylon pale crepe, which sold at 63½, is now quoted at 55. Quotations on December 5th were:

Para—Up-river, fine, per lb.....	55 a 55½
Up-river, coarse	36¾a ..
Island, fine	46½a 47
Island, coarse	25 a ..
Caucho, ball, upper	35 a ..
Caucho, ball, lower	35 a 36
Cameta	25 a ..
Ceylon—First latex, pale crepe...	55 a ..
Brown, crepe, thin, clean	46 a ..
Smoked, ribbed, sheets	54 a ..
Centrals—Corinto	40 a ..
Esmeralda	39 a ..
Guayule	26 a 28
Balata, sheets	.. a 82
Balata, block Ciudad	.. a 73
Balata, block Panama	54 a ..
Mexican—Scrap	39 a 40
Frontera	39 a 40
African—Massai red	.. a ..
Tires—Automobile	5 a 5¼
Bicycles, pneumatic	4½a 4¾

DOMESTIC SCRAP RUBBER

Inner tubes, No. 1.....	20½a ..
Inner tubes, No. 2.....	10 a 10½
Red	10 a 10½

Activities of the Motor Truck Association of Philadelphia

Patriotic Trend to Motor-Truck Meeting

George M. Graham, of Pierce-Arrow, Tells of Future Truck Work. Emlen Hare Attends. Edward W. Burnshaw, Jr., Explains New Jersey Laws Governing Truck

The monthly meeting of the Philadelphia Motor Truck Association last Wednesday night at the Hotel Adelphia developed into a discussion of patriotic matters relating to war. The attendance was one of the largest in the history of the Association, and the speakers held the attention of the audience until after 11 o'clock. O. W. Doolittle, president of the Association, presided.

Edward W. Burnshaw, Jr., chairman of the Traffic Committee, was called upon to explain the operation of the New Jersey laws governing trucks in that state. He pointed out some apparent inconsistencies and injustices in the laws as affecting trucks and trailers and stated that if rigidly enforced they would tend to greatly handicap the operation of motor trucks in that state and would have the effect of driving business out of the state. He pointed out that under the law costs and licenses are to be determined by the size of tires and trucks.

W. H. Metcalf, secretary, read a letter from R. T. Black, former manager of the International Motor Co., now at Camp Meade, in the engineer corps, who gave up his position here to enlist with the United States army as a private.

George M. Graham, formerly of The North American, but now connected with the Pierce-Arrow Co., of Buffalo, spoke on trucks of today and their future and made an appeal to his hearers to make every possible sacrifice for their country during the war. He made a special reference to the necessity for every citizen co-operating with the Government in the suppression of all disloyal acts on the part of alien enemy residents in this country.

E. J. Cattell, city statistician, spoke of the United States as a nation of builders at present and the world builder in the future. He showed by figures and statistics how Americans could easily curtail their expenditures by two-fifths without depriving themselves of any necessities or affecting business. In Philadelphia alone, he said, this would result in a saving of more than $1,000,000,000 a year.

Lieutenant C. P. Franklin, in command of the ambulance corps at Allentown, spoke of the high type of young men in the United States service and the sacrifices they have made to enlist in the defense of their country.

Colonel Dant Moore, stationed at Camp Dix, dwelt on man power, stating that it is not only money and industrial co-operation that are needed. He said that every year there are 800,000 men coming within the military age for service and that 500,000 of these are physically fit.

Emlen Hare, ex-president of the Association and now Packard branch manager, in New York, paid a high tribute to the Philadelphia Motor Truck Association, stating that it is the most successful of its kind in the country.

E. A. Fitts, of the Autocar Company, spoke of the motor truck as an adjunct to the railroad and advocated the general use of trucks to obviate freight congestion at freight stations and shipping terminals as to prevent the deterioration of the foodstuffs in transit.

R. E. Chamberlain, formerly chairman of the entertainment committee and now manager of the Truck department at the Packard factory of Detroit, paid a tribute to American manufacturers in coming forward to the country's aid, and stated that they were today producing more trucks than had ever been manufactured before. He showed how, by the use of giant pneumatic tires, the truck could relieve the railroads in making long runs. He said that a company was successfully maintaining a fleet of trucks operating regularly between Akron and Boston.

MILLER & WOODWARD, INC., 3751 Bigelow Blvd., Pittsburgh, Pa., has been appointed representative for the Standard Roller Bearing Co., Philadelphia, Pa., and will handle S. R. B. products in Pittsburgh and the surrounding territory.

Busy Winter S. A. E. Program

As customary, the annual meeting of the Society of Automotive Engineers will be held in New York City during Show Week. January 10th will be known as S. A. E. day. It will begin with a business session at 10 lasting until noon. A buffet luncheon will be served in the meeting hall, and a professional session will follow in the afternoon. In the evening will be the Automotive Dinner at the Hotel Biltmore with accommodations for over 1000.

There will also be an S. A. E. day at the Chicago Show, Friday, February 1st, with an afternoon tractor engineering session followed by the War Dinner at the Hotel LaSalle with accommodations for over 1200.

In addition, a special afternoon and evening session will be held in New York during the week of the Motor Boat Show, January 19th to 26th, when motor boat subjects will be considered, followed by a Motor Boat Dinner. During the week of the Aviation Show there will be a special afternoon and evening session.

Camouflaged Armored Car Used by U. S. Marine Corps

U. S. Marine Corps, known as the fighters on land and sea, are equipped with fighting apparatus from both the army and the navy. The above photograph shows one of their armored cars that has been painted so that it cannot be seen at a distance.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

Personal Items

Walter C. Voss, who was in charge of the rim and tube division of the Standard Parts Co., Cleveland, O., with offices in Detroit, has been transferred to Washington to look after the interests of the company in that city.

A. R. Johnson has been appointed assistant advertising manager of the Hyatt Roller Bearing Co., Detroit, Mich.

Edmund B. Sigerson, formerly with the Goodyear Tire & Rubber Co., has been appointed sales promotion manager for the McGraw Tire & Rubber Co., with headquarters at East Palestine, O.

Howard E. Coffin has been appointed chairman of the Aircraft Production Board by the President. The aircraft board will work in conjunction with the Signal Corps. Mr. Coffin will be concerned only with the providing of airplanes for the army and navy, and will have nothing to do with operations.

B. E. Blackley is now directing the sales and advertising of the Larrabee-Deyo Motor Truck Co., Binghamton, N. Y.

Jefry W. DeCou has resigned as factory manager of the Smith Motor Truck Corp., Chicago, Ill. Mr. DeCou is an inventor of some note and will devote some time to private research work before again identifying himself with an automobile concern.

Benton G. L. Dodge, formerly with the Standard Parts Co., Cleveland, O., will assume the post of director of advertising and sales of the McNaull Tire Co., Toledo, O. Mr. Dodge was advisory counselor of advertising for the Standard Parts Co.

Walter E. Holland has been appointed research engineer by the Philadelphia Storage Battery Co., Philadelphia, Pa. Mr. Holland was for ten years connected with the Edison Storage Battery Co., Orange, N. J..

Earle T. Sutton, of the Denby Motor Truck Co., Detroit, Mich., factory sales organization, has been placed in charge of the territory in the Middle West from North Dakota south to Oklahoma.

J. P. Hunting has been appointed special representative in charge of equipment sales for the General Asbestos & Rubber Co., Charleston, S. C.

E. W. Tracy, formerly director of purchases for the Premier Motor Corp., Indianapolis, Ind., has joined the production department of the United States army under Christian Girl.

Chas. G. Percival, advertising manager of the Van Cortland Vehicle Corp., New York City, eastern distributors of the Peerless cars and motor trucks, has been commissioned a captain in the United States Army and has been called to the Motor Equipment section of the Ordnance Department.

Alan Jamison has been appointed special representative by the Burd High Compression Ring Co., Rockford, Ill., with headquarters at Baltimore, Md.

A. L. Martin has joined the staff of the Edward A. Cassidy Co., New York City, in the capacity of western manager with headquarters at San Francisco, Cal.

V. S. Faast has accepted the position of sales manager of the Harward Mfg. Co., St. Louis, Mo.

Ernest A. Stephens has come to the Chilton Co. as field editor of the Automobile Trade Journal and the Commercial Car Journal. For fifteen years he was engaged in manufacturing and selling tires and cars in Europe. During the last five years his work has been editorial, three years as associate editor of Motor and two years on the Horseless Age.

F. C. Batchelder, formerly with the White Motor Co., Cleveland, O., has been appointed factory representative by the Burd High Compression Ring Co., Rockford, Ill.

R. B. Dangeleisen, sales manager of the Globe Machine & Stamping Co., Cleveland, O., died recently at Saranac Lake, N. Y. Mr. Dangeleisen entered the Globe employ in 1902.

R. A. Palmer has become general sales manager for the Collier Motor Truck Co., Sandusky, O.

Arthur H. Hertz

Who has been appointed district sales manager for the O. Armleder Company, Cincinnati.

New Agencies

The Jackson Sales Co., with headquarters and salesrooms at 5919 Penn St., Pittsburgh, Pa., has been appointed distributor in western Pennsylvania for Dart trucks manufactured by the Dart Motor Truck Co., Waterloo, Ia.

Kissel Motor Car Co., Hartford, Wis., has recently appointed the following dealers as distributors for its motor trucks: Walter Daehn, Fenton, Mo.; T. A. Gill, Perry, Mo.; P. E. Carriker, Irving, Ill.; Litchfield Auto Repair Co., Litchfield, Ill.; Randolph Motor Co., Asheville, N. C.; D. R. Scurry, Cross Hill, S. C.; P. W. Lockmiller, Petersburg, Neb.; Meyers Auto Co., Norfolk, Neb.; Wm. G. Hesse, Tulare, Cal.; Altoona Kisselkar Co., Altoona, Pa.; George E. Bayha, Wheeling, W. Va.; Eclipse Motor Sales Co., Tulsa, Okla.

Cartinhour-Bowman Co., N. Capitol Ave., Indianapolis, Ind., has secured the agency for Smith-Form-A-Trucks.

Stratton-Gramm-Bernstein Truck Co. has been organized at Chicago, Ill., for the distribution of the Gramm-Bernstein truck.

Hamilton Motor Co. has taken the distributing agency for the Stewart truck in Chattanooga, Tenn.

La Crosse Motor Co., Denver, Colo., has taken the distributing agency for Vim motor trucks for Colorado and Wyoming. H. Mallen and W. McCutcheon are the principal stockholders in the new firm. The agency will be located at 1457 Blake St.

Oneida Motor Truck Co., Green Bay, Wis., has opened a branch at Minneapolis, Minn., which will be known as the Oneida Truck Sales Co.

Graham Bros. Sales Co., distributors of the Graham Bros. truck unit in Baltimore, Md., is now located at 207 W. Fayette St.

Phoenix Motor Co. has been organized by J. Albert Pedro for the distribution of the Phoenix truck attachment in Baltimore, Md. The new distributing station is located at 1700 N. Charles St.

Cuban Importing Co., Amagura 16, Havana, Cuba, has been appointed agent for Harvey trucks in the Republic of Cuba.

Towar-Ayers Co., Detroit, Mich., has been appointed distributor for Denby trucks by the Denby Motor Truck Co., Detroit, Mich. The Towar-Ayers Co. has taken the large service station at 973 Woodward Ave.

D. Lloyd Smith

Sales engineer of Selden Truck Sales Company, Rochester, N. Y., who is devoting attention to motor-truck freight problems.

R. B. Crane

Sales manager of Sundry Division of Racine Rubber Company, Racine, Wis. Formerly with the Double Fabric Tire Company.

J. C. Ayers

New vice president of the Denby Motor Truck Company, Detroit, Michigan, in charge of sales and advertising.

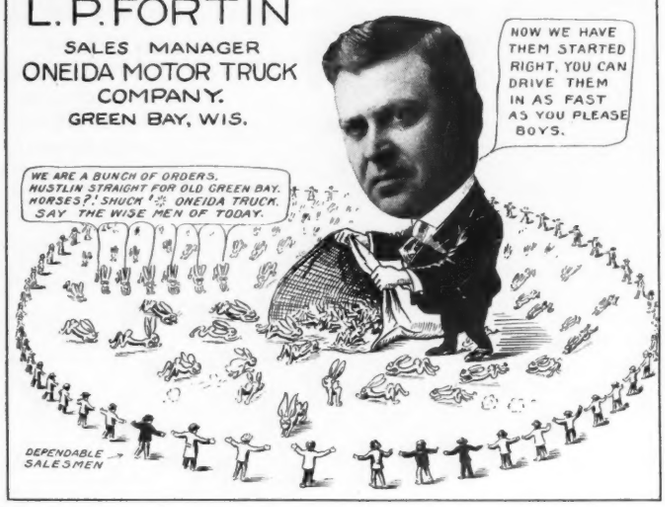
H. A. Conlon

Formerly with Federal Motor Truck Co., now vice president and sales director of the Acason Motor Truck Co., Detroit.

CCJ GALLERY of SALES MANAGERS

L. P. FORTIN

SALES MANAGER
ONEIDA MOTOR TRUCK COMPANY.
GREEN BAY, WIS.



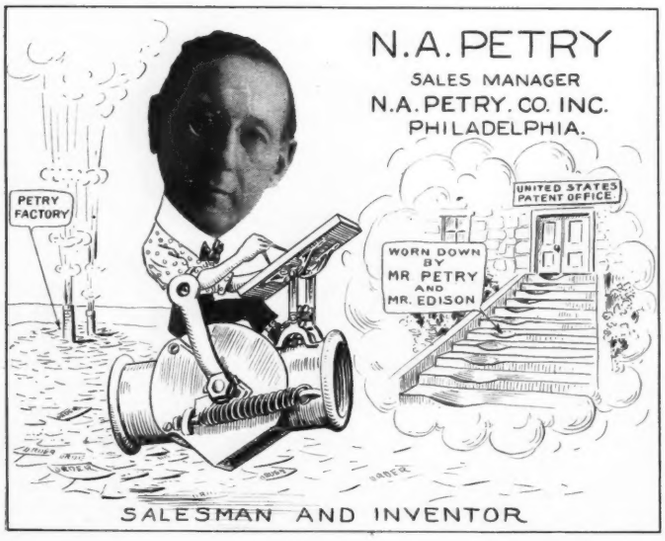
S W. WIDNEY

SALES MANAGER
ADVANCE FELT SPECIALTY & CUTTING COMPANY.
CHICAGO, ILL.

COMPETITORS BEWARE WHEN THE DRIVE IS ON

N. A. PETRY

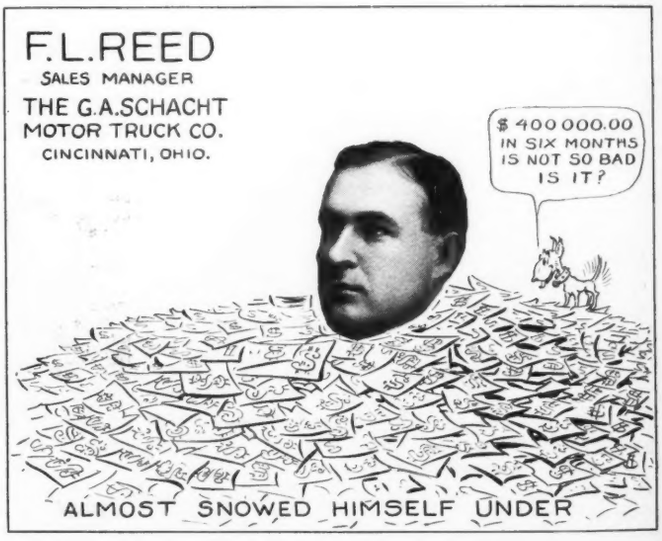
SALES MANAGER
N.A. PETRY. CO. INC.
PHILADELPHIA.



SALESMAN AND INVENTOR

F. L. REED

SALES MANAGER
THE G.A.SCHACHT MOTOR TRUCK CO.
CINCINNATI, OHIO.

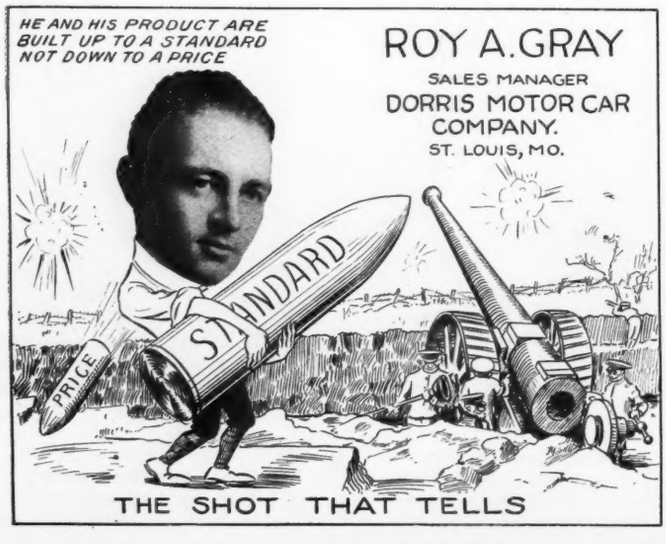


ALMOST SNOWED HIMSELF UNDER

HE AND HIS PRODUCT ARE BUILT UP TO A STANDARD NOT DOWN TO A PRICE

ROY A. GRAY

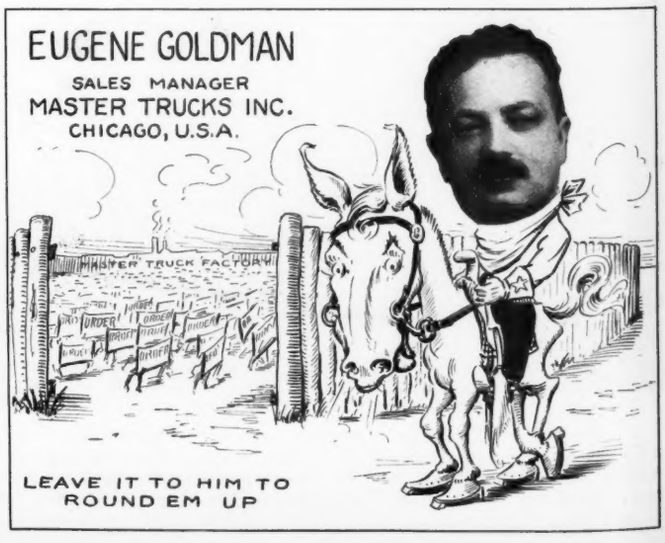
SALES MANAGER
DORRIS MOTOR CAR COMPANY.
ST. LOUIS, MO.



THE SHOT THAT TELLS

EUGENE GOLDMAN

SALES MANAGER
MASTER TRUCKS INC.
CHICAGO, U.S.A.



LEAVE IT TO HIM TO ROUND EM UP

Soldier Workmen Needed For Army Repair Shop Service

Back of the fighting front of the American Army in France there will be established warehouses and repair shops for handling vast amounts of ordnance equipment. General Pershing is very anxious that these shops should be established at the earliest possible moment. A division of the Ordnance Department of the United States Army, known as the American Ordnance Base Depot in France, will be in charge of this work. This division will be a military organization, all of the men in it to be soldiers of the United States Army under military discipline.

Men are needed to enlist in this division, not as fighters, but for overseas service as skilled or unskilled soldier workmen. About 9000 men will be required at first, and of these about 2000 are expected from the Chicago area. The Chicago office for this recruiting is at 435 S. Dearborn St., and is in charge of the Ordnance Recruiting Committee of the Military Training Camps Association.

Men between the ages of 18 and 40 will be enlisted for the duration of the war as privates, but there is opportunitty for promotion to higher grades. They will receive free quarters, rations, clothing, bedding, medical and dental attendance, and pay ranging from $30 to $61.20 a month. Men with minor physical defects may be accepted. Men of almost every vocation and trade are needed, particularly automobile repairmen, cooks, gunmakers, harnessmakers, machinists, millwrights, optical instrument repairers, painters, steel polishers, plumbers, etc. In addition to the headquarters at 435 S. Dearborn St., information can be obtained from any United States Army recruiting station.

At present men who are exempt from the National Army, under the provisions of the Selective Service draft, cannot be accepted for this division. But men over or under draft age or men of draft age not yet ordered into camp, may be accepted. Wives or dependents are provided for. The wife receives half of husband's pay plus $15.00 a month, plus $10.00 a month for one child, plus $5.00 a month for each additional child.

U. S. Signal Corps Wants Skilled Workers Behind the Lines

The U. S. Signal Corps wants skilled workmen in many branches, including chauffeurs, auto-mechanics, draftsmen, carpenters, radio-operators, electricians, machanists, blacksmiths, riggers, vulcanizers, motorcyclists, pattern makers, air-plane workers, coppersmiths, painters, moulders, linesmen and etc. Also cooks and barbers. All skilled workmen are given ranks above the privates as soon as they are assigned to a squadron and receive all their clothing and food, in addition to their pay. They will work in the airdomes back of the lines. Further information may be had by writing to the Volunteer Bureau, 119 D Street, N. E., Washington, D. C., or to E. Z. Steever, Major Signal Corps, War Department, Washington, D. C.

Growing Use of Coal-Gas Fuel

The development of the use of coal gas as a fuel goes on steadily in Great Britain, and is likely to so long as the present gasoline shortage lasts. Recently a show of representative vehicles running on coal gas, held in London, included some 45 entries. Among these were two examples of cars running on coal gas stored in steel cylinders at high compression. This seems to be the next phase in the adaptation of coal gas for the road, but the use of steel for this purpose has its drawbacks. At the high pressures used, not only must the storage cylinder be kept under very careful inspection, but it has to be frequently annealed.

Considering this, and the desirability of economizing steel, and work in steel, one firm has already produced a gas cylinder containing no metal. It is made of fabric and rubber, encircled at intervals with rubber rings, and one of these containers, 5 ft. long and 12 in. internal diameter, has stood a hydraulic pressure of 1,600 lb. per sq. in. Normally, however, it is charged to 1,000 lb. pressure, when it will hold 600 cu. ft. of gas. The whole thing weighs less than 100 lb.

Another container is on somewhat similar lines, but the gas is introduced through a central tube which acts as a tension stay for the ends, and the walls are retained by steel rings.

Ford to do Government Work

Although impossible of official confirmation at this time, it is definitely known that the mammoth parent plant of the Ford Motor Co. is to be devoted eventually to Government work entirely. It will be several months before such a step could be taken completely on account of the stupendous amount of readjustment of the plant necessitated by such a move, but even at this early date department managers have been instructed not to begin any "new work," but to confine their departments to the completion of the parts now in process. In other words, no new raw materials are to be devoted to the making of strictly passenger Ford automobiles.

It is considered possible that Ford will cut out the manufacture and sale of cars, for there are parts for a vast number in the various assembly plants throughout the country, and also a large supply in the course of construction at the factory, hence undoubtedly the sale of cars will continue, at least as far ahead as can be foreseen now. No plant of the Ford class knows what will happen in the far distant future if the war drags out for several years hence.

Many of the present Ford chassis will be devoted to ambulance uses, and a large contract for such vehicles is now being turned out. The new Ford truck will also continue to be made in such quantity as will satisfy Government needs, at least, and possibly to take care of the public demand as well. Just now it is difficult to tell how this will work out.

Very likely Ford will get a good slice of the work on the new U. S. A. truck, as well as in the manufacture of the Liberty engine. No doubt various parts of our shells will soon come from Highland Park also.

Republic Truck With Reproduction of Liberty Bell, in the Liberty Loan Drive in Maryland

This float is mounted on a two-ton Republic truck, which was sent throughout the State of Maryland by Habersham-Miller, Inc., the Baltimore Republic dealer, to help the great Liberty Loan campaign. The bell, which was made by the Bell Foundry Company, was rung night and day by the four marines who are seen in the picture.

"New York's First Auto Patrol Is Still in Active Service."—Unbeknown to the contributor of the article having the foregoing title, which was printed in the October issue of the Commercial Car Journal, page 29, and of course, unknown to ourselves also, the photograph used in connection with the article was a copyrighted one of the New York Edison Co. and credit should have been given to the *Edison Monthly*, in which the photograph and similar story first appeared in its June, 1917, issue.

Jersey Modifies New Truck Law

The Motor Truck Club of America has been instumental in securing a modification of the new truck law in New Jersey. It is due to the efforts of the M. T. C. that the alterations noted below have been made.

The new law relating to motor trucks. which is known as Chapters 45 and 228 of the 1917 session of the New Jersey Legislature, and which was to go into effect January 1, 1918, has been altered by Commissioner Dill as follows:

Under the new law the speeds were reduced to 12 and 10 miles per hour for 3- and 5-ton trucks. This prohibition is removed and the present law left in effect.

Under section 13 of the new law it would be unlawful to carry more than two-thirds of the combined weight of vehicle and load on the rear wheels. All existing equipment is now exempt from this provision, though we are not clear as to how it will affect new equipment after January 1, 1918.

Study of the allowable weights to be carried on tires indicates, however, that with normal loading, new trucks, as at present designed, will qualify under this section.

For example—a 5-ton Pierce-Arrow dump truck, when loaded, weighs about 21,000 lb. Each rear wheel, equipped with 6-in. dual tires, can carry 7562 lb. or a total weight on both rear wheels of 15,124 lb. The total allowable weight would then be 22,686 lb., which is sufficient.

The allowable weight per inch of tire is increased 10 per cent, or to the weights shown in the following table.

All motor-driven equipment including trailers and semi-trailers must have rubber tires.

The section requiring governors on trucks is changed so as to exempt all present trucks.

Gross Wheel Load in Pounds for Commercial Motor and Motor-Drawn Vehicles Equipped With Tires of a Given Size and Diameter

Size of Tires	Single	Diameter of Wheel and carriage capacity 32 in.	34 in.	36 in.	38 in.	40 in.	48 in.
2	Inches	621	654	687	726	759	792
2½	Inches	924	979	1034	1089	1144	1189
3	Inches	1237	1309	1375	1446	1512	1584
3½	Inches	1556	1639	1721	1804	1886	1969
4	Inches	1859	1958	2062	2167	2271	2370
5	Inches	2575	2612	2750	2887	3025	3102
6	Inches	3096	3267	3437	3613	3784	3954
7	Inches	3712	3921	4125	4334	4537	4746
2	Double	1237	1307	1375	1443	1512	1582
2½	Double	1844	1952	2062	2172	2282	2392
3	Double	2475	2612	2750	2887	3025	3162
3½	Double	3107	3272	3437	3602	3767	3932
4	Double	3712	3916	4125	4334	4537	4741
5	Double	4950	5225	5500	5775	6050	6325
6	Double	6187	6534	6875	7221	7562	7909
7	Double	7425	7837	8250	8662	9075	9487

Overland to Nevada in a King Semi-Trailer

Mr. Charles I. McHenry, president of the Marinette-Nevada Mining Company, is using a King semi-trailer, drawn by a Knox traction unit, to transport his household goods from Chicago, Ill., to Goldfield, Nev., a distance of 2800 miles. This Knox traction unit is a converted Ford, with a carrying capacity of one ton. The King semi-trailer is the one and a half ton model.

Lane Closes Big Contract

M. H. Lane, president of the Lane Motor Truck Co., Kalamazoo, Mich., has recently closed a three-year contract with a large truck dealer in New York for 800 trucks, valued at over $1,500,000. The order calls for 200 trucks the first year and 300 each the second and third. The trucks will be the 1½-, 2½- and 3½-ton models.

Mr. Lane stated recently that, in view of the fact that many large orders had lately been received and there was a prospect that a contract would soon be closed with the government, an enlargement of the plant would, in all probability, be necessary. A meeting of the directors was held to discuss the situation, and it was decided that by a re-arrangement of present floor space and the erection of additions to the present plant, production could be tripled and employment given to from 75 to 100 hands.

Silvex Company Reincorporated

Silvex Co., Bethlehem, Pa., announces the formation of a new corporation, under the laws of the state of Delaware, capitalized at $2,000,000 which will be divided equally in an issuance of $1,000,000 common and $1,000,000 preferred stock. The new board of directors includes' E. H. Schwab, president; E. B. Turn, W. H. Lumpkin, J. H. Ward and W. M. Davidson, all of Bethlehem.

The company will shortly move into the new concrete and steel factory which has been erected during the past year and outfitted throughout with new machinery. The growing demand for the Silvex Company's products—spark plugs and other automobile accessories—necessitated the increase in capital and production facilities.

Stegeman Corp. Reorganized

Upon the resignation of Mr. Oscar Stegeman from the presidency of the Stegeman Motor Car Co., Milwaukee, Wis., manufacturer of the Stegeman worm-drive trucks, Mr. Adam J. Mayer, treasurer of the Mayer Boot & Shoe Co., was elected to fill his place. Mr. L. G. Schertl resigned the position of secretary and treasurer in favor of Mr. Lynn S. Pease, who is well-known as an expert on industrial organization. E. M. McLean has become sales manager under the new organization. The company will continue the manufacture of 6-cylinder trucks, but will confine the line to 2-, 3½- and 5-ton models, eliminating the 3-, 4- and 7-ton sizes.

AUTOCAR Co., Ardmore, Pa., is making plans for the establishment of direct factory branches in Los Angeles, San Diego and San Francisco. These Pacific Coast branches will do business under the name of Autocar Sales & Service Co. of California, recently incorporated. The establishment of these branches indicates that Autocar users will in future deal directly with the manufacturer. M. S. Bulkley, who has been California representative for the Autocar, will in future be Pacific Coast representative.

State Highway Officials Meet

Federal aid and convict labor were the two topics which received most consideration at the meeting of the Association of State Highway Officials, held at Richmond, Va., December 5 and 6, at the Jefferson Hotel. W. D. Uhler, of Pennsylvania, presided and at the opening meeting Logan Waller Page, director of the United States Office of Public Roads, gave a talk on the "Federal Aid Road Law." In the afternoon speeches on the same subject were made by T. H. McDonald, of Iowa; H. G. Shirley, of Maryland; C. M. Babcock, of Minnesota; W. S. Falls, of North Carolina, and T. J. Ehrhart, of Colorado.

The main conclusion from their remarks is that the most serious drawback to a more rapid extension of good highways is insufficient help from the Government and too much confusion in the rules and regulations relating to how the national funds for aiding state highway construction should be distributed. It is agreed that no further argument is necessary to convince the people of the value of good highways, since we became involved in the war.

A number referred to the difficulty of getting materials on account of the "priority orders" as a consequence of which road construction and maintenance are hampered where material is not near enough at hand to be conveyed to the work by motor truck.

Several of the speakers mentioned convict labor in road building and agreed that while it has been a great help in some places, one disadvantage is that just as the convict has become experienced as a road-builder, he has served out his term and is discharged.

SWISS MAGNETO Co., Elkhart, Ind., has removed to Toledo, O., and will in future be known as the American Magneto Co.

First Horseless Field Artillery

By LEN G. SHAW

The United States is said to be the possessor of the first horseless regiment of artillery in the world. It is the Ninth Heavy Field Artillery, organized in Hawaii some time ago, and its equipment is such as would have been regarded impracticable before the lessons of the present war had been driven home with such convincing force.

Caterpillars have come in for much attention on the battle fronts, and the death dealing "tanks" have disclosed an effectiveness that cannot be discounted. However, it remained for the Ninth Heavy Field Artillery to utilize tractors of this type as the sole motive power.

Twenty-four Holt caterpillar 45 tractors are used for hauling that number of heavy guns—sixteen 4.7-in. guns and eight 6-in. howitzers, together with their caissons. There is also assigned to each of the six batteries an additional tractor, which hauls a battery wagon and a store wagon in which are carried extra parts and materials.

Fifty-two motor trucks are provided to carry ammunition to the firing line, and sixty motorcycles are included in the equipment.

Each caterpillar is called upon to haul 10 tons, that being the weight of one of the field guns or howitzers with two full caissons of ammunition and gun crew. It is said that with this form of motive power a gun can be put into action or limbered up and moved to another point more expeditiously than would be possible with horses.

Caterpillar-Hauled Battery of the Ninth Heavy Field Artillery, Climbing a Fifty Per Cent Grade at Schofield Banks, Hawaii, With a Full Load of Ten Tons

The estimated saving in first cost of a tractor equipped regiment over the old style horsedrawn is $40,000, this representing the difference between the horses that would be required and the tractors. After cost of operation has been provided for there is said to be an additional saving equal to nearly half this amount in pay, clothing, rations and forage.

One feature that especially commends the outfit is its ability to get anywhere regardless of ground conditions.

Rubber Club of America Guests of H. S. Firestone, at Akron, Ohio

The directors and standing committee of the Rubber Association of America, that served during the two years of the presidency of Mr. H. S. Firestone, were Mr. Firestone's guests, in Akron, Ohio, Saturday and Sunday, November 17th and 18th.

The Eastern delegation arrived Saturday morning and visited the Firestone rim and rubber plants and Firestone Park. The afternoon was spent in a visit to O. C. Barber's farm, the Army football game and golf at the Portage Country Club. In the evening dinner was served at the Country Club. President F. H. Goff, of the Cleveland Trust Company, made an address on the "Relations of Finance to the Rubber Industry," and Mr. Edgar B. Davis, managing director of the U. S. Rubber Company, who has spent many years in the Far East developing rubber plantations, also spoke. Mr. Firestone entertained his guests on Sunday at his home.

HESS-BRIGHT Co., Philadelphia, Pa., manufacturer of ball-bearings, announces the closing of its Philadelphia branch, 934 N. Broad St., owing to the fact that both R. S. Whiteside, manager of the branch, and his assistant, G. L. Jenks, have resigned to join the Aviation section of the U. S. Army. Business formerly carried on at this branch will be taken care of at the factory, Front St. and Erie Ave.

Announcement to the Shippers of Philadelphia*

Shipments Between City Stations Embargoed

As a further step in conserving the transportation facilities of Philadelphia and the surrounding region, and aiding the plants manufacturing war materials and other necessities to keep in continuous operation, the Philadelphia District Committee on Car Service has decided to place an embargo on all carload shipments of freight originating in and terminating at stations in Philadelphia, as well as on less-than-carload freight between points within the corporate limits of the City. An embargo will also be placed on all re-consignments of either carload or less-than-carload freight within the City limits.

Notice of these changes has already been made public. They will not be placed in full operation, however, until December 1, 1917, in order to afford shippers an opportunity to adjust their methods to meet the new conditions.

The Philadelphia District Committee on Car Service consists of Operating and Traffic representatives of the three railroads which serve Philadelphia, viz., the Baltimore & Ohio Railroad, the Pennsylvania Railroad, and the Philadelphia & Reading Railway. The purpose of the Committee is to administer, to the best possible advantage, the car supply and general railroad facilities of Philadelphia and its surrounding region, in co-operation with the work of the Railroads' War Board, at Washington, D. C.

The embargoes announced will become effective at the City freight stations of all three Companies simultaneously.

Object of the Restrictions

The purpose of placing these embargoes is to relieve the railroads from the necessity of rendering, in the City of Philadelphia, what is virtually a teaming service, which, at the present time, seriously interferes with the performance of their proper duties as interstate carriers.

The practice of shipping freight over the railroad lines from one station to another, within the City limits, has grown to very considerable dimensions. It requires the use every day of a large number of cars which otherwise could be devoted to long distance traffic, necessary to keep the war-industries running. It materially adds to the congestion of railroad tracks in the City, is a drain on labor facilities at freight stations and also seriously increases the accumulation of freight on station platforms and the congestion of teams waiting to load or unload at freight stations.

Owing to the arrangement of the railroad tracks in the City, which have been planned as terminals for long distance traffic, it is often necessary to send intra-city shipments over very circuitous routes in order to make delivery between points only a very short distance apart in an air line. This involves an amount of shifting and other labor, on the part of the railroad forces, which is felt to be disproportionate to the character of the service actually rendered to the shipper.

It has, therefore, become the belief of the Philadelphia District Committee on Car Service that, in the public interest, such service should be performed by teams and trucks through the City streets, as it can be rendered with greater efficiency and economy in that way than by utilizing the facilities of the railroad which are more urgently needed for other purposes.

Reconsignments Within the City

The practice of reconsigning freight, after its arrival at one of the railroad stations in the City, to another station within the corporate limits is similar, in its effects, to the making of direct shipments between intracity points. Customs in various trades have given rise to the practice. For instance, a carload or partial carload of a given commodity may arrive at a station in West Philadelphia. The consignee may sell the contents of the car to a buyer located on the Delaware River front, or in Kensington or South Philadelphia. The shipment is then re-consigned, which means that the car will have to be hauled over a roundabout route of many miles of terminal railroad track in order to deliver its contents to the buyer.

For service of this kind the railroads receive certain rates which are governed by public tariffs, but it is the belief of the Committee on Car Service that the practice should be discontinued altogether for the reason that it imposes a tax on the railroad facilities of the City out of proportion to the service rendered the shipper or consignee. The Committee, therefore, feels that shippers who receive their freight at one part of the City and sell it to a purchaser in another part should be prepared to arrange for the deliveries themselves, by team or truck.

Under the new arrangement, it will be necessary for shippers to designate on the Bill of Lading at the starting point of a carload or a less-than-carload shipment, the particular Philadelphia Freight Station or siding at which delivery is intended to be made. Otherwise, when the shipment arrives in Philadelphia it will be placed by the Railroad Company at the most convenient delivery point and the consignee will then be obliged to go to that point for it.

To sum up, the Committee believes that the shippers of the City, with the facts before them, will appreciate that the restrictions herein announced will make possible the better performance, by the railroads, of their war duty. Transportation of freight between stations within the City can, from the viewpoint of public economy, be better effected by teams and trucks than by burdening the terminal facilities of interstate railroads. Relieving the railroads of this service will liberate a large labor force and increase the station space, the trackage and the cars available for those forms of public service which only the railroads can perform on a large scale, including long-haul freight, Government shipments, munition exports and troop movements.

The Committee desires to call the public's attention to the fact that the English railroads, under the stress of war emergency, have gone very far in restricting short distance freight traffic. They have not only forbidden intra-city shipments, but have placed freight embargoes on all shipments of freight between points less than forty miles apart, thus compelling all traffic of that character to be hauled by teams or trucks, in order to relieve the railroads, as far as possible, and leave them free for troop movements and long distance freight.

* Full reprint of a pamphlet issued by the Philadelphia District Committee on Car Service, representing the Baltimore & Ohio, the Pennsylvania, and the Philadelphia & Reading railroads.

The Use of Motor Trucks for Light Freight Service on the Shorter Hauls

Views of a Large Shipper

(*Carlton R. Blades, Traffic Manager, George R. Keith Company, in "Factory" for October,* 1917.)

Motor-trucks have effected a saving in cost as well as a betterment of service. But this is getting ahead of the story. To begin at the beginning, we have our main factories in Brockton. There is a branch plant in Weymouth, about seventeen miles distant by road, and there is another in Boston—roughly, twenty-five miles away.

If we rely on the railroads between Brockton and Weymouth, a shipment goes to Boston, where it has to be teamed from the inbound freight-house to outbound freight-house (because it is in less than carload lots). Then it is freighted to Weymouth, where it is teamed to the factory. Freight handled in this way between Brockton and Weymouth costs thirty cents a hundred. Costs with the motor-truck on this trip run about ten cents a hundred, or one-third of the freight costs between Brockton and Weymouth. But even this large saving is out-shadowed by the large value of service given.

On only two days this last year was the service interrupted, and that was one day at a time after two separate severe snow-storms.

On the alternate day the same truck goes between Brockton and the Boston plant. It leaves Brockton at eight o'clock with the same character of load as in the Weymouth case and makes the run in about two and one-half hours. It leaves Boston on the return trip at about 1 00 o'clock and gets to Brockton at 3.30 or 4.00 o'clock.

We save only a few cents a hundred on this haul over freight, but this Boston schedule keeps the Weymouth truck busy

and gives the Boston factory far better service than the railroad could.

Furthermore, this motor-truck service enables the factories to work much closer as to the stock of supplies than would be possible with freight methods.

Motor Trucks Prove Worth

(Special Correspondence, Philadelphia Public Ledger, from Atlanta, Ga., November 8, 1917.)

Probably one of the most interesting events of the week in the Southeast was the test run of motor-trucks, for military purposes, between Atlanta and Chattanooga. On this test run it was found that troops and supplies can be conveyed over military highways faster and at less cost than by rail. Says the Atlanta Constitution: "The average gross time it took to carry five truck-loads of supplies—ten tons—to Fort Oglethorpe from the Candler Warehouse in Atlanta was between seven and eight hours, whereas the best time the railroads make in moving the supplies is four days, according to one of the officers. Exact figures of the cost per ton per mile for the work of transporting the supplies have not been officially announced, but it is known definitely that the cost was far lower than the cost by rail."

This truck test is significant. Already wholesale houses in the larger cities of the Southeast, like the wholesale houses of the North and East, have been experimenting with motor-trucks for the shorter hauls. With improved highways and the development of motor power there is to be a revolution in freight rates and freight handling.

Membership of the Philadelphia District Committee on Car Service

Representing the Baltimore & Ohio Railroad.

Mr. W. F. Richardson, Assistant General Freight Agent, Widener Building.
Mr. C. C. F. Bent, General Agent, Widener Building.
Mr. R. B. White, Superintendent, Philadelphia Division, 24th and Chestnut Streets.

Representing the Pennsylvania Railroad.

Mr. A. B. Clark, Superintendent, Philadelphia Terminal Division, West Philadelphia.
Mr. Geo. D. Ogden, Freight Traffic Manager, Broad Street Station.
Mr. R. L. O'Donnel, Assistant General Manager, Broad Street Station.

Representing the Philadelphia & Reading Railway.

Mr. F. M. Falck, Assistant General Manager, Reading Terminal, Philadelphia.
Mr. J. B. Warrington, Superintendent, Philadelphia Division, Reading Terminal.
Mr. R. L. Russell, General Freight Agent, Reading Terminal.

G. H. BURTIS,
Secretary.

R. L. O'DONNEL,
Chairman.

A Very Timely and Effective Half-Page Newspaper Advertisement For the Local Sale of Trucks

Arguments That Sell Trailers

By WARREN EUGENE CRANE

HOW can I sell the trailer?" and "What arguments will close the deal?" are two questions that puzzle many automobile dealers. It is comparatively easy for them to sell a passenger car or motor truck because their manifold benefits are well known. With the trailer, however, the selling problem is a comparatively new one that requires entirely different treatment.

In the first place, the trailer salesman should strive to imagine himself in the place of the man to whom he wishes to sell. If his prospective buyer is the proprietor of a hardware store, he should study the delivery problems that this particular merchant must face. He can profitably learn the average weight of his deliveries, the number of trips that he makes each day, the amount of time that he wastes in waiting for his turn at the freight house, the average cost of each package and the number of times that he is forced to double his course because his delivery car was not big enough to carry the load. Some salesmen may say that this will take too much time, but the truth of the matter is that the more information he can gather about the business of his prospect, the better fitted he will be to advise the prospective buyer what size of trailer he should purchase and whether it should be a two-wheeled or four-wheeled vehicle. For example: If he has studied the merchant's delivery system, he could tell him that he wastes an average of six hours of his driver's time each week at the freight house waiting for his turn to get a load or that he doubled his course five times a week at an expenditure of $1.20 each time. The salesman who has made a study of the subject can demonstrate clearly to his prospect that the trailer can save him enough money to pay for itself within a comparatively short time.

In the second place, the well informed salesman should show how the trailer can increase the load handled by a truck without over-burdening it. If he should ask the hardware dealer to carry a ton of stoves down the street on his back, the merchant would laugh and tell him that it was impossible. If he should ask him to put the same load on a light delivery wagon and ask him to pull it down the street for a block, he could do it without much trouble. That test shows the secret of the trailer. A motor truck is like a man, for it can pull that which it is impossible for it to carry. If the salesman can make this clear to his prospective buyer, he has made an important move toward the sale.

The third step is to convince the buyer that the expense of a trailer is only ten per cent. extra on an average while the loads pulled have been known to be as high as four times the rated capacity of the truck alone.

The fourth step is to convince the dealer that the trailer is a good investment. If the salesman can show him that the time of a driver at $3.50 a day can be saved, and that the cost of each delivery may be reduced from twelve cents to eight cents, he has made an important advance toward the consummation of the sale.

In the fifth place, the dealer should emphasize the fact that the day of the trailer is coming. He should maintain that it is just as necessary as a cash carrier, a motor truck or a safe. It is one of the ways in which he can save money and at the same time render his customers more prompt and efficient service. The salesman should show him that the merchant who buys up-to-date and money-saving equipment has a better chance to be successful than the man who conducts his business along lines popular a decade ago. The creaking push cart, the wooden till and the little bell that tinkles when the customer opens the doors, are becoming relics of the past Sometime in the future, the merchant without a trailer will be in the same category as the man who clings tenaciously to these out-of-date pieces of equipment.

A sixth step that the salesman who is introducing the trailer should take is that of appealing to the pride of his prospect. He should show him that it brands him as progressive to be among the first in a community to use a trailer. In addition to this he could emphasize the valuable advertising that it would bring him.

If the United States Government should limit or stop the sale of motor trucks to individual firms or corporations, as a war measure, and take the factories' entire output for military transportation, the people who already have them in service would be forced to seek some way in which to increase their capacity, and they could accomplish this by means of the trailer.

Furthermore, though it is a remote prospect, if the Government takes over the factories now used in the manufacture of trucks and converts them into institutions devoted to the production of munitions, the dealer will be forced to go out of business temporarily unless he has the agency for a trailer and other accessories firmly established so that he can depend upon them for his subsistence.

Haiss Digging Wagon Loaders

The Geo. Haiss Mfg. Co., Inc., New York City, manufactures wagon loaders similar to the one illustrated, for loading motor trucks and trailers with such material as crushed stone, dirt, etc.

Haiss wagon loaders will load, it is said, at a speed of one yard a minute, at a cost of one-half cent for electric current or gasoline. Should a concern be now handling material by hand labor, it will save approximately ten cents a yard over the old hand method, according to the manufacturer.

The machines are equipped with either 10 h.p. General Electric, Westinghouse or Wagner motors, or Novo or Ideal gasoline engines. The electric motor is geared directly to the elevator and is equipped with Westinghouse circuit breakers instead of fuses. The gasoline engine is guaranteed against damage from freezing of the water jacket.

The propelling mechanism is geared directly from the motor and consists of a jack shaft of automobile design geared directly to the rear wheels. The forward speed is 100 ft. per minute and the reverse speed is 60 ft. per minute. The front axle is built of channels with pivoted connection in the center that takes care of all irregularities in the road. The truck frame is always level as it is supported at three points. Steering knuckles of automobile type are cast steel of more than ample size and are connected through a ball and socket connection to the steering wheel of the worm gear type.

The buckets on the elevator are bolted to two pin chains with 8 bolts in each buck-

The Haiss Loading Device Filling a Truck With Crushed Stone. This Machine Does the Work So Quickly and Efficiently That Man Power Offers No Comparison.

et, insuring a very rigid connection. The buckets are 18 in. long, 12 in. wide, and have a capacity of over ½ cu. ft. They are built of a high carbon steel and are said to outlast a malleable iron bucket many times.

The wheels on the machine are large, the front being 24 in. diam., with a 6-in. tire, while the rear wheels are 48 in. diam., having a 6-in. tire. All wheels are equipped with roller bearings. Wearing parts on the machine are equipped with interchangeable bronze bushings. The frame of the machine is built of rigid steel sections, insuring long life.

B. A. D. A. Elects Officers

At a meeting held by the Baltimore Automobile Club of Maryland, the officers of the organization were elected for the ensuing year. At this meeting the dates of the Baltimore Automobile Show were decided upon, conditional upon securing the Fifth Regiment Armory, the dates established being January 22-25 inclusive.

The following officers were elected: W. F. Kneip, president; L. E. Lambert, vice-president; W. L. Duck, secretary-treasurer. The board of directors includes W. F. Kneip, L. E. Lambert, W. L. Duck, Donald Anthony and A. H. Bishop.

The following committee was nominated and subsequently appointed by the president to serve on the standing committee of commercial car dealers: Lee Seyster, A. W. Owens, R. J. Hamill, Theodore Straus and A. H. Bishop.

DISCO ELECTRIC STARTER CORP., Detroit, Mich., which has had filed against it an involuntary petition of bankruptcy, has turned over its business to the Detroit Trust Co., in accordance with a decree of the United States District Court, which appointed that company as receiver.

THE OHIO FOOD ADMINISTRATOR is conducting an investigation of the state in order to determine the practicality of the farm tractor. He is asking the crop commissioners and agricultural agents to cooperate with him in securing accurate data on increased production resulting from farm tractor use.

Goodyear Industrial Village

The demand for tire fabrics has increased so much of late that the Goodyear Cotton Mills, Inc., were this year forced to increase their facilities at Killingly, Conn. Winter weather and frozen ground were not allowed to stand in the way, for the need was urgent.

Accordingly, the Aberthaw Construction Co., of Boston, was given the contract to erect 88 workmen's houses, a large hotel for single men, and a 7-story storage building.

Work was started on January 2, it first being necessary to construct a labor camp to house the contractors' men. Furthermore, as the site was two miles from the nearest railroad station, considerable work had to be done repairing the country roads so that they would stand the heavy traffic.

The eighty-eight cottages contained respectively four, five and six rooms, with solid concrete cellars and foundations. For reasons of economy, most of these were built either semi-detached or, in the case of the 4-room cottages, in blocks of four. Twelve single houses of six rooms each were provided for high-priced employes able to pay the rent for these dwellings. Above the first floor the houses were built of wood frame, lathed and plastered inside and covered with shingles on the outside. The roof was covered with fireproof shingles of asphaltic felt.

The notable feature of this work was the speed with which it was carried out, only three months being required to erect the eighty-eight houses.

The hotel was designed to accommodate fifty single men.

Concrete foundations were built, framing was completed in three weeks and the large house was plastered and finished in eight weeks of cold winter and spring weather.

The storehouse itself, designed by Charles T. Main, of Boston, was of reinforced concrete, seven stories high and 102 by 122 ft., having a loading platform running the whole length of the building 8 ft. wide.

Special gangs were organized to take care of each operation of the work so that instead of one gang of carpenters putting up the framing and completely finishing a house, there were separate gangs that framed house after house. Other gangs followed, putting on outside finish; other gangs laid floors. There was a gang for stairs and porches, another for inside finish and so on. Each gang knew how long it would be before a subsequent gang would be along to take the next step, and they worked at top speed.

The whole of the work on the village, including water supply and a sewer nearly a mile long, was completed in three months.

Minneapolis Headquarters of the S. A. E.

The Minneapolis section of the Society of Automotive Engineers announces the establishment of it general headquarters office at 541 Plymouth Bldg. This office is to be used for committee meetings and general information.

The Meetings and Papers Committee has arranged for the monthly meetings beginning November 7 to be held at the Radisson Hotel. The meetings will be held on the evening of the first Wednesday of each month up to and including May 1.

It is also announced that the Society Tractor Standard Committee will hereafter hold its meetings at the Minneapolis headquarters.

Officers of the Minneapolis section are: E. R. Greer, chairman; W. J. McVicker, vice-chairman; H. C. Buffington, secretary; J. S. Clapper, treasurer.

Indians to Receive Royalty

Secretary of the Interior Lane announces that 20,000 acres of Osage Indian oil lands offered for leasing recently sold for $1,687,000 bonus. In addition to this sum which goes to the Indians, they will also receive a royalty of one-sixth upon the oil taken out of the land.

Group of Homes for the Employees of the Goodyear Cotton Mills at Killingly, Conn. All Built Within Three Months

Coal Gas for Automobile Use

By L. M. MEYRICK-JONES, London

AMERICAN gas engineers are taking an interest in the development of coal gas in England for use on automobiles. At the sixth annual meeting of the British Commercial Gas Association recently held in London, an important discussion took place on "Coal Gas for Motor Cars." The object of this discusion was to consider not so much the immense possibilities of the use of coal gas as a substitute for petrol now and in the future, for these are widely recognized and admitted, as the various difficulties to be overcome before it can be generally adopted, and in particular the obstacles set in the way by war conditions affecting priority, labor and the like.

Comparative Cost of Gas and Petrol

The three chief points around which the discussion centered were cost, storage and supply. On the first point, F. W. Goodenough, executive chairman of the Association, produced a table of comparative costs as between gas and gasoline which showed that, taking the most moderate view, gasoline was two and a half times dearer than coal gas. E. S. Shrapnell-Smith, petroleum economy officer, considered this figure extremely modest, and stated that within his own knowledge it was being excelled every day, even with gas "stripped" for high explosive materials. He maintained that it was quite safe to take 250 cu. ft. of gas as equivalent to a gallon of gasoline, and stated that he had records in his possession of instances where an average of 210 cu. ft. of gas, and even less, had been made to do the work of a gallon of gasoline.

Comparative Cost of Coal Gas and Petrol for Motor Fuel

Price of Coal Gas per 200 cu. ft., pence	Equivalent cost of gasoline per gallon, pence. (a) on basis of 200 cu. ft.—33 gal.	(b) on basis of 200 cu. ft.—4 gal
6	18	15
7	21	17½
8	24	20
9	27	22½
10	30	25
11	33	27½
12	36	30
13	39	32½
14	42	35
15	45	37½
16	48	40

These tabulated figures were later in the discussion challenged on the ground that with gas only 80 to 85 per cent. of the power given by gasoline could be obtained, but Mr. Goodenough pointed out that even so the figures, after correction, admitted of taking 262 cu. ft. as an equivalent of a gallon of petrol on the 100 per cent. power basis, while Mr. Shrapnell-Smith expressed the opinion that greater power was only a matter of time and adjustment in the admission of gas and air. He instanced, as an example of highly satisfactory results, the Edinburgh heavy single-decker 'buses—as heavy as the London double deckers—for which gas afforded ample power on the hills even in that very hilly district, and which consumed gas at the rate of 41 cu. ft. per mile, thus giving an equivalent of 246 cu. ft. to one gallon of petrol.

Difficulty of Storing the Gas

Another important point discussed was the question of storage. It was admitted that the "gas bag" was purely a war time expedient—though a cheap one—and that during the war the possible compression of gas into metal cylinders could not be considered as practicable, owing to prior claims on the necessary metal, and the difficulty of obtaining compressing machinery. After the war, however, it is in this direction that developments are to be expected. Mr. Shrapnell-Smith was quite optimistic in regard to the extra load involved in the use of metal containers; he pointed out that when it becomes permissible to use high-tensile or Siemens-Martin 7-per cent. chrome steel, it should be possible to reduce the present reckoning of 14 cwt. of dead weight of metal per 1000 cu. ft. by at least 60 or 70 per cent. He also reminded the meeting that the low cost of gas made it possible to run a four-ton commercial wagon with a three-ton load, and yet effect all round economy.

One speaker made the suggestion that the compressing difficulty might be avoided by converting motor car engines into compressors. Another alluded to the possibility of using an absorbent material to absorb the hydrogen from the gas, and then carrying some of the liquid hydrocarbons remaining over to enrich the mixture when traveling up hills, or carrying heavy loads. Mr. Shrapnell-Smith said that the liquefaction of gas is also a method that deserves attention as presenting attractive features including very light weight.

The question of supplying the necessary gas was shown to be somewhat complicated. It was stated, in the first place, that the gas makers have as much work to do at present as they can manage with their limited staffs, and that they would be bound to protect themselves by adding at least an extra 2d. to their charge for every 100 cu. ft. of gas sold, to cover loss of time and attendance; also that generally the necessary accommodation for dealing with any volume of traffic would be lacking. There was no reason, however, Mr. Goodenough declared, why garages should not sell gas to their customers; but the all important point in this connection was the provision of meters of sufficiently large capacity to enable the filling to be done in a reasonable time. The chief difficulty lay in the fact that the Priority Board on the Ministry of Munitions had already "rationed" the meter makers for their ordinary work, and probably would not be able to allow them extra supplies. The question might be solved, he said, either if gas bag capacity fixed by the Weight and Measures authorities, or if the rotary or inferential meters on the market, which were not legal instruments for measuring gas under the Sale of Gas Act, were allowed by the Board of Trade to be used; and Mr. Shrapnell-Smith thought that this might be arranged, though he was afraid nothing could be done to facilitate the construction of new meters. Reference was also made to the advisability of standardizing fittings for connection between the gas supply and the container.

Coal-Gas Fuel Not Improbable

On the general question, Mr. Shrapnell-Smith pointed out that gas traction was the one available solution of the petrol difficulty, and invoked the whole-hearted support and co-operation of the gas industry in the matter. He stated that two representatives of the B. C. G. A. were to act on Walter Long's Gas Traction Committee, and he hoped that developments would be such as to make possible a saving of fifty million gallons of petrol in the year beginning October 1, 1918. He warned the meeting, however, that it might become necessary to institute some sort of priority in gas consumption, and grade the vehicles requiring gaseous motor fuel according to their place in the order of national importance; he understood that this matter was already under consideration by the B. C. G. A. The general impression that the petroleum economy officer left upon his hearers, was that he was distinctly hopeful as to the prospects of gas as a motor fuel both now and after the war; and he made it clear that the matter was to be seriously considered by experts in the various spheres concerned, and the details carefully and practically worked out as the great importance of the question deserved.

CHAMPION SPARK PLUG CO., Toledo, O., has arranged an interesting program for its annual sales convention, to be held during the week beginning December 17th. The business sessions will include journeys through the company's Toledo and Detroit factories, talks by men prominent in several fields of endeavor, round table discussions, moving pictures and practical demonstrations of salesmanship. One of the features of the recreative side of the convention is to be an indoor athletic meet, which will include swimming races, boxing bouts, indoor base ball game, etc. F. B. Caswell, sales manager of the Champion Spark Plug Co., is in charge of the convention program.

Commercial Car Accessories for Winter

Review of Devices That Facilitate Engine Starting and Car Running in Cold Weather or Increase Comfort, Convenience or Safety

Electrically Heated Vaporizer Assists Engine Starting

Master Primer Company, 1523-31 Front Street, Detroit, Mich.

The Master Primer is an electrical heating device which employs the additional advantage of mixing the heated fuel with air.

The Primer is attached to the carburetor and secures its supply of gasoline from that source. No auxiliary tanks for high test fuel or ether are used. The outlet of the primer is connected either to the carburetor or the intake manifold, in either case the connection being above the throttle of the carburetor which should be closed when using the device for starting.

Phantom View of Master Primer. Supplies Heated Gas Vapors to Intake Manifold

Electrical current is obtained from a battery and since the heating coil requires less than 20 amperes, the additional drain on the battery really affects a saving.

The control lever, which is operated from the dash, makes electrical contact, opens the outlet valve and the air passage. Vapor rising from the boiling gasoline is drawn with the air into the intake manifold. A spring on the control lever breaks contact and closes the valve automatically.

Whiz Stop-Freez Compound

R. M. Hollingshead Co., Camden, N. J.

Whiz Stop-Freez Compound is especially prepared to prevent the water of the cooling system from freezing, but it also has cleansing properties which prevent mineral impurities in water from forming deposit and scale. The maker states it will not injure metal, rubber, or any part of the cooling system or power plant. One application is sufficient for the winter season providing there is no leak, loss of solution, or waste in overflow. It is non-explosive and non-inflammable and when mixed with water in the radiator, will not crystallize. It is sold in one and five gal. cans.

To withstand a temperature of 20 deg. above zero it is necessary to use two parts of the compound to five parts of water; to withstand zero weather, four parts of the compound to five parts of water; to withstand ten deg. below zero, one part of the compound to one of water.

Su-Dig Double Electrode Plug

Superior Motor Power Company 30 Irving Place, New York

A special double-electrode plug, made to operate in series with the regular single spark plug, thereby producing greater power, assisting starting and running of cars by causing two simultaneous sparks in each cylinder is produced by this concern.

It is wired in series with the ordinary spark plug. Instead of having one grounded electrode, this plug has two electrodes, both of which are insulated, the top of the plug having a terminal connected to each electrode.

Su-Dig Spark Plug for Connecting in Series

One terminal of the Su-Dig plug is connected to magneto or battery, and the other terminal is connected to the ordinary spark plug; thus, the current passes through both plugs in series, the spark occurring in both plugs simultaneously.

Tests made with these plugs have shown an increase in power and a decided increase in gasoline mileage. The price is $1.50 each.

Arrow-Grip Non-Skid Chain

Arrow-Grip Manufacturing Company Glens Falls, New York

The Arrow-Grip Non-Skid chains are offered in units designed to attach to any truck wheel. They are offered in all sizes for all kinds of truck wheels whether equipped with single or dual solid tires. The chains are easily attached or detached by means of locks on the spoke clamps which are attached to the spokes permanently. Thus to attach the chains it is necessary to attach only the length of chain to each locking device of the spoke clamps. These chain units are made of malleable iron castings and clamps are lined with pliable material to prevent marring the spoke. Clamps are offered in all sizes and styles, and sufficient chain is furnished with each to fit any new tire. The prices vary from $1.75 to $2.85.

Unit of the Arrow-Grip Chain

Truck Chains and Tire Grip

Woodworth Manufacturing Corp. Niagra Falls, New York

This concern is manufacturing the "Easy-On Truck Chain," a simple chain for solid tires, which has a leather covered chain to fasten about spoke and also manufactures the "Easy-On Solid Tire Grip," a U-shaped piece of oval steel over which fits over the tire and rim. When the wheel slopes the U-shape grip assumes a slanting position, the edge taking a grip in any soft road surface.

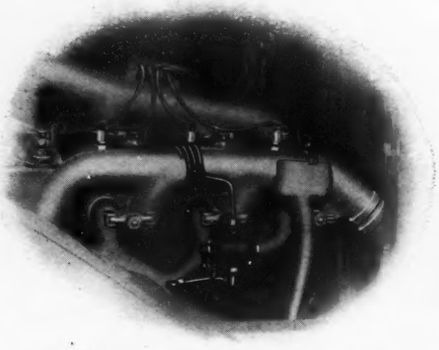
Descriptions and illustrations of both of these products appeared on page 21 of the November 15th issue of this magazine.

This concern will exhibit its products at the National Shows.

Hoosier Sub-Carburetor

Hoosier Sub-Carburetor Co.
Indianapolis, Ind.

The Hoosier Sub-Carburetor is a device designed to supply heated air to the intake manifold, the quantity of air to be admitted being regulated by the position of the throttle. It has a screen block, which is inserted between the carburetor and the manifold when installation in this manner is convenient. The heated air supplied to the intake mixture is drawn from a stove



Hoosier Sub-Carburetor Attached

on the exhaust pipe, or from a coil of copper tubing to the sub-carburetor valve. The opening in this valve is controlled by the throttle, by means of a rod and clamp furnished with the sub-carburetor. From the valve the air passes on to the intake manifold, through tubing or to the screen block.

The manufacturer states that this device will facilitate starting and increase the mileage, and is especially beneficial to the engine in cold weather. The price of this device for attaching to the Ford engine is $10. It is also made for any four or six cylinder engine.

Frost-King Radiator Cover

Cincinnati Auto Specialty Co.
Cincinnati, Ohio

Three plies of material are used in the construction of Frost-King covers. The top is imitation leather, the center is asbestos, and the inner ply is Kersey lining. The top material is water-proofed and the cover is attractively finished and quilted.

Cover With Flap Rolled Up

Different patterns that are suitable for almost every car are made. The front is sectioned so that, when the car is standing, the radiator is completely closed, and when in motion, the flap of the cover is rolled up and held in position by a slip-loop over the radiator cap.

This concern is producing these covers at prices ranging from $6.50 to $10, complete. The radiator covers can be obtained separately if desired.

Crew Levick Victor Heater

Crew Levick Company, Land Title Building, Philadelphia

This concern is offering the Victor Heater for the Ford car only, the price, complete with attachment, being $5.

In this heater the principle of the hot-air furnace is utilized, fresh air being circulated over a heated drum. The heating drum is attached to the exhaust pipe of the

Crew Levick Victor Heater

car and the exhaust gases, when so directed by the valve, pass the heating drums. The fresh air, circulating around the outside of the drum, within the heater casing, becomes heated, the warm air rising into the car. The force of the exhaust gas is modified by the cone-shaped basket-weave screen as it passes out into the open air from the heater.

Installation of this heater requires no flexible tubing or extra equipment of any kind since the heater is attached to the exhaust pipe. The Victor heater does not hinder the escape of the exhaust gases and in fact relieves the muffler of part of its work in that a portion of the exhaust gas is diverted from the muffler through it.

Ad-El-Ite Non-Freezing Liquid

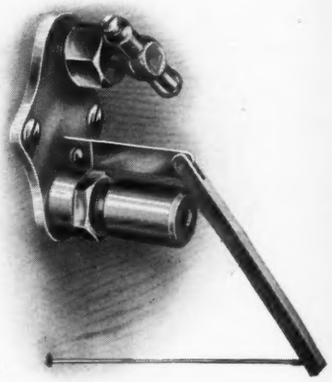
Adams and Elting Company, 716-726 Washington Boulevard, Chicago

This concern offers Ad-El-Ite non-freezing liquid for winter radiator troubles. It is said to be harmless to metals or rubber, and prevents corrosion, freezing and rust; it keeps the radiator clean, and it will not burn, explode or evaporate. Undiluted it will not freeze at fifty degrees below zero. To resist ten degrees Fahrenheit above zero eight portions of the compound to eleven of water is necessary; at zero eight of compound to seven of water; at ten degrees below, eight of compound to five of water, etc. The mixing formula tells exactly the amount of Ad-El-Ite to be used in solution with soft water. Ad-El-Ite is priced at $1.50 per gallon.

Prest-O-Primer Assists Starting

Prest-O-Lite Company, Inc.
Indianapolis, Ind.

This device, offered by the well known manufacturer of Prest-O-Lite tanks, is designed to assist starting a cold engine by injecting acetylene gas into the intake manifold. The principal units of the outfit are



Valve Arrangement for Hand-Cranking

the controller valve, the automatic reducing valve, and a compression union elbow for the intake manifold. The gas is fed at low pressure through the regulator, which is attached to the Prest-O-Lite tanks, then through piping to the controller valve, which is located on the dash in case a self starter is part of the car equipment, and from there passes on to the elbow which is attached to the intake manifold.

In case the engine is cranked by hand, a lever for operating the valve from the front of the car is furnished.

Presto Electric Engine Heater

Metal Specialties Manufacturing Co.
338-352 Kedzie Avenue, Chicago

The Presto Electric Heater is a compact article, just 12 in. long with a handle at one end and a hook at the other. It is made to hang under the hood, near the carburetor, engine and radiator, distributing the heat where it is most needed. It

Complete Presto Electric Heater, No. 2100

is furnished with 10 ft. of cord and an attachment plug for any electric light socket. It is made for use on 110-volt current, either direct or alternating.

This electric heater is made with twin coils running parallel to each other, which makes the heater flat and easily inserted into any space about the radiator and carburetor where the heat is most needed. The price is $4.

Standard High-Tension Magneto

Standard Ignition Company, Elkhart, Ind.

This magneto, which is about to be put on the market, will have two principal features; first, the range of spark advance and retard; second, the method of advancing and retarding the spark. Both of these features contribute to easy starting qualities of an engine in cold weather.

The Standard high tension magneto spark control varies the angular position of the armature shaft in relation to the driving shaft and also provides a range of 40 degrees from full advance to full retard. Thus the spark is delivered at the high wave moment of the magneto only, no matter whether the engine is operating with the spark at full retard or full advance. This is very useful in cold weather when carburetion is poor.

Fuller details and illustrations of this magneto will be published in a later issue.

Henney All-Season Cab Top, and Vestibule Panel Body

Henney Buggy Branch of Moline Plow Company, Moline, Ill.

Winter accessories to provide for the comfort of the driver of the commercial car in the form of an all-season cab top and vestibule front panel body are included in the Henney line of commercial car bodies for Fords.

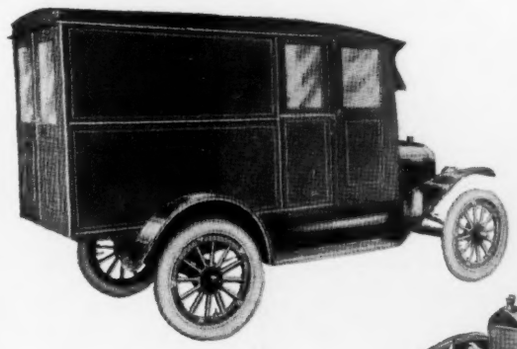
The All-Season Cab Top

The All-season cab top is of attractive design with side panels solid, and glass lights at the side of the driver's seat. The upright posts of wood are of substantial iron. The roof is solid slatted and covered with oiled duck.

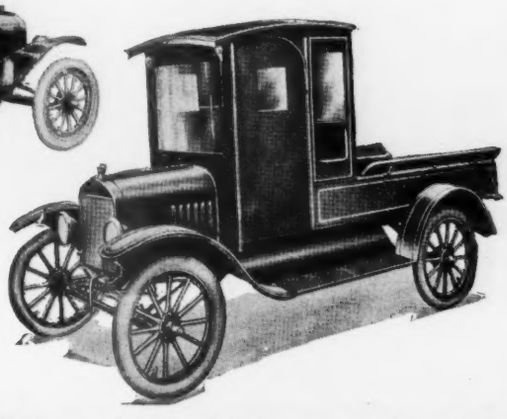
A blind fore door can be furnished as an extra if desired. The seat is equipped with full length lazy back and cushion, upholstered. The ventilating windshield is in one piece. The driver's curtains are of heavy oiled duck and have large celluloid lights. Foot board and toe board, of hard wood and fully ironed, are regular equipment. The finish is green with fine line stripes.

Vestibule Steel Panel Body

The body has inside dimensions of 43 x 60 in. It has built-in windshield and removable side doors. The panels are of 20 gage steel, especially prepared and sandblasted before painting. Oak and ash are used in the framework. The back and cushion are neatly upholstered and the painting is black with fine line stripes. This body has full length wear-plates on the bottom.



Henney All-Season Cab Top With Ventilating Windshield and Oiled-Duck Curtains with Lights.



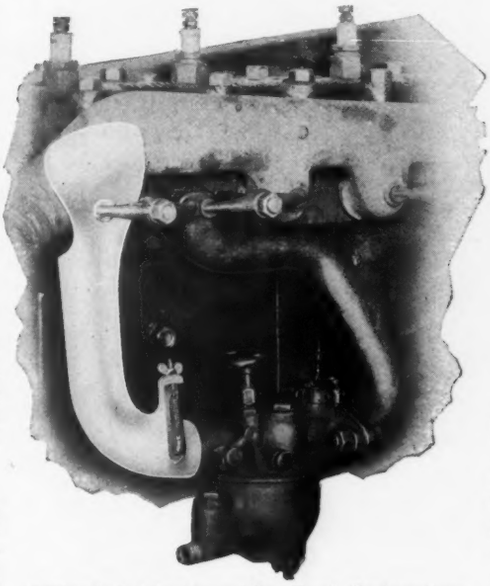
Henney Vestibule-Front Steel-Panel Body For Ford Cars

"Ritemix" Heats and Regulates Air to the Ford Carburetor

Perfection Auto Parts Company, Cleveland

The "Ritemix" is said by its maker to be a scientific device for heating and regulating the air intake of the Ford carburetor. It replaces the present hot-air pipe to the carburetor and consists of an automatic shutter valve fitted in the opening of a special, large flanged, hot-air pipe. The valve is operated by the suction of the engine and can be adjusted to any Ford.

The carburetor is supplied with dry, warm air, positively regulated under all conditions, essential to proper carburetion. Power, it is claimed, is increased 20 to 40 per cent., fuel mileage raised 4 to 10 m. per gal., and easier starting effected. After installation, it requires no attention, as it is automatically regulated to all temperatures and motor speeds. The price of this device is $3.



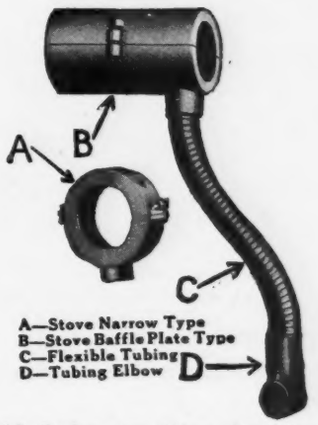
"Ritemix" Attachment for Ford Carburetors

Device Heats Gasoline Spray

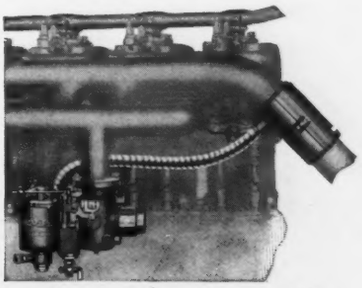
Findeisen & Kropf Manufacturing Company, 21st and Rockwell Streets, Chicago, Ill.

The kind of gasoline in use today should first be heated in cold weather to obtain efficiency and economy.

Many devices are employed to get heat to the carburetor, but an original method put into practice by this concern has proven to be quite practical and satisfactory. A stove or housing is clamped around the exhaust pipe or manifold and is so constructed that the air passing through it is heated to a high degree of temperature. The heated air is then drawn through flexible tubing to the fixed air intake of the carburetor, which in the Rayfield carburetor comes in direct contact with the gasoline at the nozzle opening, thus greatly assisting vaporization.



Rayfield Carburetor Warm-Air Attachment



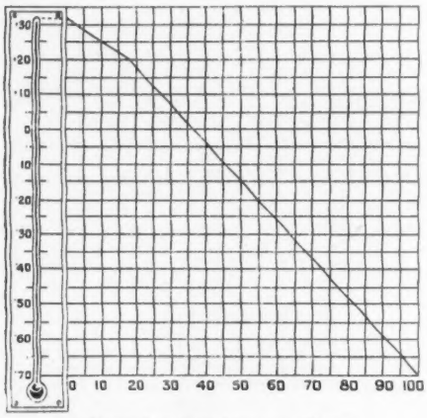
Warm Air Attachment Installed

The installation of this device is very simple and inexpensive, yet has proven to be a money saver and friend in need to many during the winter months.

Anti-Freeze for Radiators

Northwestern Chemical Company
Marietta, Ohio

This concern has on the market a chemically prepared and tested anti-freeze for radiators called Thermite. It is a saturated solution of 60 degrees F. When the temperature is lower crystals will form. It is non-inflammable, and may be heated with safety until the crystals disappear. It will not crystallize in the radiator, as the solution is weakened by the addition of water.



Thermite Anti-Freeze Chart

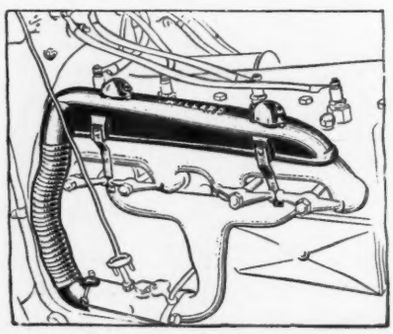
It will not evaporate, and one application is said to be sufficient to protect the car all winter. Various per cents of Thermite used according to directions on the chart, which is lithographed on every can, will give protection at any temperature desired. Thermite sells for $1.50 per gallon.

The curve on the chart tells exactly at what temperature any given solution of Thermite will freeze. Thus, a 55 per cent solution will freeze at 20 F. degrees below zero; 65 per cent. at 30 F. degrees below, etc.

Willard Superheater for Fords

Willard Company, South Bend, Indiana

The Willard Superheater has several features which appeal to the average Ford commercial car operator. The Willard Superheater can be installed on a Ford engine in ten minutes' time with the aid of a wrench. There are no holes to drill, nothing to cut or fit, and it has no moving parts.



Willard Superheater Attached to Ford Engine

The Superheater is a casting made from a clear run of pig iron, being molded in new sand. The flexible tubing screws on the elbow of the Superheater and is held on by three small bosses which act as a thread and fit naturally into the spiral groove in the inside of the tube; the lower end of the tubing is fastened to the elbow, which fits into the carburetor by the same method. This makes a tight and permanent connection that can be easily taken apart.

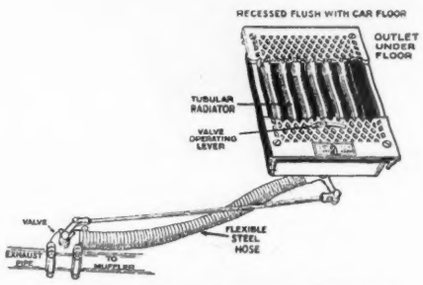
The Superheater is built much higher at the rear end than it is at the front, ¾ in. high inside at the front and 1¾ in. inside at the rear. This is done with the idea of giving the air incoming a chance to expand naturally as it becomes heated by passing over the top of the exhaust manifold. The air is taken into the Superheater through two ¾-in. holes, these holes protected by caps to keep out as much foreign matter as possible.

The Superheater is placed tightly over the exhaust manifold and has beveled edges, which fit very snugly and is held down by two metal straps under the manifold clamps. The elbow is held in the carburetor by a ¼-in. set-screw passing through a heavy lug. This elbow is of the same diameter as the smallest diameter of the intake manifold. This increases the velocity of the air across the needle valve and tends to thoroughly vaporize it.

Perfection Motor Car Heaters

Standard Parts Co., Cleveland, Ohio

Several types of exhaust gas heaters are offered by this concern, the principle being the same in all types, and the only variation being in reference to size or design or



Perfection, Type A, Heater With All Connections Made

the provision made to meet special conditions of installation.

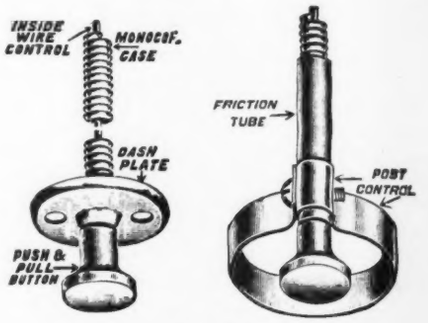
The valve regulating the amount of exhaust gas to pass through the heater is attached to the exhaust pipe in front of the muffler. The exhaust gas then passes through flexible steel tubing to the radiator, and is there distributed to the gas-tight tubes, thence passing out to the open air. Should the heater tubes become coated with carbon, the radiator can be easily disassembled and the tubes cleaned. The latter are tapered on the ends and fitted into tapered holes in the manifolds, which are held together by bolts.

Eight types of heaters are offered, these ranging in price from $12.50 to $30.

Breeze Dash and Post Adjusters

Breeze Manufacturing Company, Inc.
250 South Street, Newark, N. J.

Many styles of dash and post adjusters are included in the Breeze line, these devices being used primarily for carburetor chokes and needle valve adjustments to facilitate starting the engine in cold weather. These adjusters are offered either with a plate for attaching to the dash, or with



Breeze Dash and Post Adjusters
At the left is the dashboard type; at the right the steering-column type

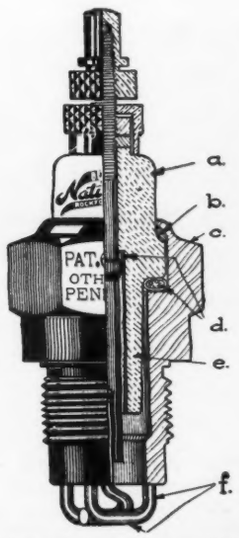
a band and retaining bolt and nut to be clamped about the steering post. The value of these devices, enabling the driver to make and change adjustment without moving from his seat, is apparent to all. Coiled wire is used as a case or holder for the adjusting wire within, this being moved back and forth by pulling or pushing the button.

The standard adjusters have 5 ft. of coil from button to end, the button with ¾ in. face, and 1⅜ in. plate in the case of the dash type. The finish is polished nickel-plate. Quotations are given on special assemblies and quantities.

Bergie National Spark Plug

Bergie National Spark Plug Co., Rockford, Ill.

The feature of this spark plug is the 1-in. firing surface. The illustration clearly shows the position of these electrodes, these being set parallel to each other instead of presenting points. Easy starting,



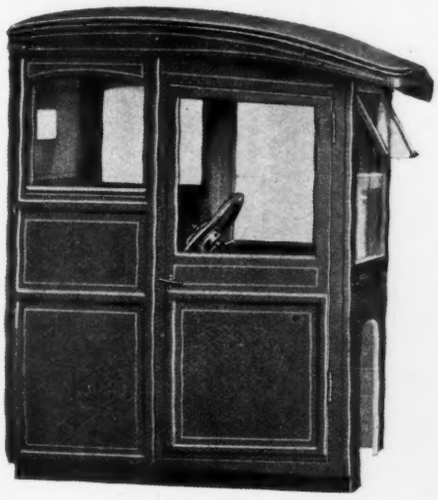
Section of the Bergie National Spark Plug

power, acceleration and flexibility are claimed to result from the use of this plug. Referring to the illustration A represents the porcelain which has extra thick walls; B, the copper gaskets; C, the shell of 1⅛ in. stock; D, copper asbestos gaskets reinforced with copper; E, skirt; F, the 1-in. firing surface. The electrodes are made of low resistance wire. These plugs are offered in all sizes at $1.

Parry All-Season Cab and No. 418 Vestibule Panel Body

Parry Manufacturing Company
Indianapolis, Ind.

The Parry All-Season Cab No. 52 has the latest Parry feature, the solid bent, one-piece rounded front deck. The roof is slatted and covered with heavy waterproof material. There are hinged windows on each side of the driver and roll-up



Parry All-Season Cab

curtains in the rear. This body is weatherproof, but may be transformed for summer use by removing the door and upper left panel, an operation requiring only a few minutes. The net weight of this body with cab is about 270 lb.

The No. 418 model of Parry body has the solid bent, one-piece rounded front deck and improved ventilating features. The loading space back of the driver's seat measures 43 x 60 in. and 53 in. high. There is no obstruction in front to prevent raising the hood. The door at the right hand side is fastened with pin hinges and can be taken off. On the left side, the upper front panel can be taken out, leaving a body with a fore door. The windshield is hinged and can be swung either in or out. The side windows are also hinged and can be raised against the roof. The body also is substantially ironed.

In addition to the two winter accessories for trucks offered in the Parry line, are several semi-enclosed cab-top bodies for various commercial uses.

Kratzer Commercial Bodies

Kratzer Carriage Company
Des Moines, Iowa

Several styles of fully enclosed bodies are offered in the Kratzer line, one of the most popular styles being the No. 141 Special, illustrated herewith. This body has full Berline front and drop windows with bevel plate glass. The standard colors of this body are green, black and maroon. Inside dimensions are: length, 60 in.; width, 43½ in.; height, 54 in. The price is $190.

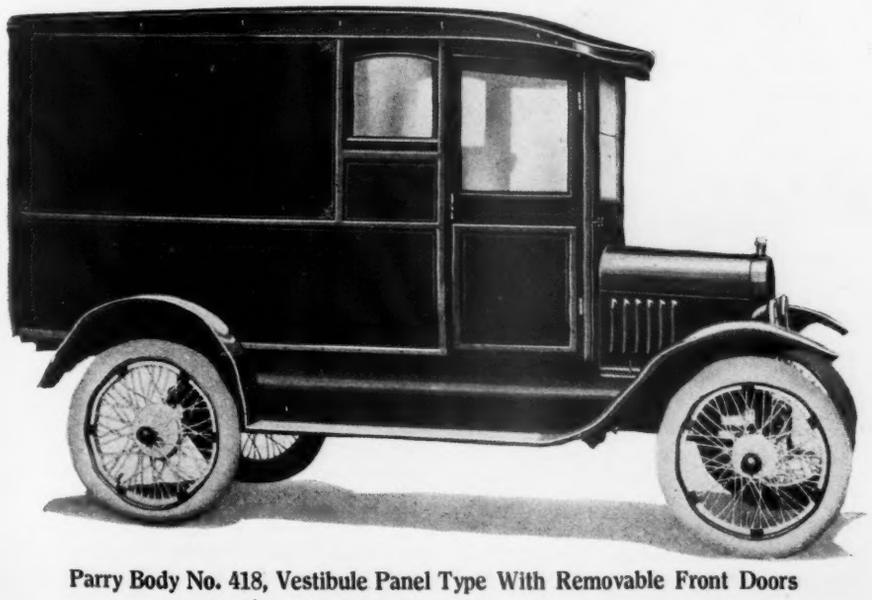
Another Kratzer body having much the same specifications is Style No. 141½, price $200. The standard colors of this body style are maroon and green. The style and specifications are the same as No. 141 Special.

Kratzer Body Style No. 141, Special, Price $190; Finish: Green, Black, and Maroon

Standley Truck Tire Chains

This concern offers the Standley Non-Skid Chain, the outfit for each truck wheel consisting of separate units of cross chain with one end designed to fasten to the felly and the other end of each to fasten to a steel ring. The maker states this ring absorbs many of the shocks which the chains would otherwise sustain.

Description and illustration of this chain appeared in the November issue, page 21.



Parry Body No. 418, Vestibule Panel Type With Removable Front Doors

Herman Non-Skid Tire Chains

Herman Manufacturing Company, 1420 Pennsylvania Avenue, Washington, D. C.

Are designed to give effective traction in mud or snow. Each section is a double chain running across the tire and connected to another chain through rings, to another chain wound and locked around the spoke of the wheel. An even wear on all the links and a reduced vibration are claimed to be secured through this method.

The links of the chain are short, and closely twisted to prevent gouging the tire and to afford better traction. Quick and easy detachment are provided. The tie chain is secured so as to not damage the spoke and the hook is said to be positive. Prices are from $5.50 to $21 per set of six for single and dual truck tires.

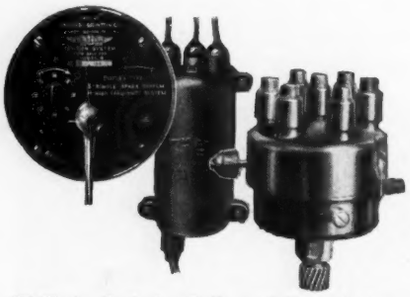
A description of these chains appeared in the November 15th issue of the COMMERCIAL CAR JOURNAL, page 22.

Philbrin Ignition System

Philips-Brinton Company, Newtown, Kennett Square, Pa.

The Philbrin ignition system, which is applicable to all cars, is claimed to be capable of starting a cold gasoline engine under adverse conditions. This system has been on the market and in use over one year and experimenting and tests with it by the maker have been going on for several years. This system consists of a combined single spark and high frequency sys-

This concern, in addition to this Duplex type of ignition, manufactures and sells separately either the single spark system or the high frequency system. The single spark system is naturally more economical in current consumption than the high frequency, and when operating the car on dry cells, it is advisable to use the single spark



Philbrin Switch, Coil, and Distributor

or main system, but where there is a storage battery current in amplitude the high frequency system is the most desirable to use, especially in the event of poor carburetion.

The Single-Spark System

This system is of the open circuit type and consumes a negligible amount of current even at low speeds. By means of a newly patented contact breaker an extremely hot spark is delivered at the spark plugs even at the slowest engine speeds, while a constant and uniform spark is obtained for all running speeds. Both mechanical and electrical "lag" is entirely eliminated without the use of a governor of any sort. A feature of the contact breaker is that there is no hinge motion to the contact points, these being pressed together or "butted" end to end so that a positive contact is produced over the whole face of the contact points. The points are always kept in line with each other, thus tending to reduce the familiar pitting of these parts to a negligible factor.

The simplicity of the contact breaking mechanism is worthy of note, the parts being clearly shown in the accompanying illustration.

The contact points are brought together gradually by the surface formation of the cam, and when the point of ample saturation of the coil is reached the breaking of the contact is absolutely instantaneous.

Although the duration of the contact is in proportion to the engine speed, the break of the contact is always instantaneous and entirely independent of the engine speed. Tests have conclusively demonstrated that it is impossible for an engine to attain a speed at which this contact breaking mechanism will fail to amply saturate the spark coil, and thereby insure an efficient spark. All parts of the contact breaker are tempered glass hard.

Special attention is called to the armored construction of the condenser used with the apparatus. This is treated in a special insulating compound and then formed under pressure in a rigid steel casing or armor. The steel enclosure absolutely prevents entrance of moisture or any possible distortion under any operating conditions. The condenser is located in the same housing that contains the breaker mechanism.

The Distribution Blade

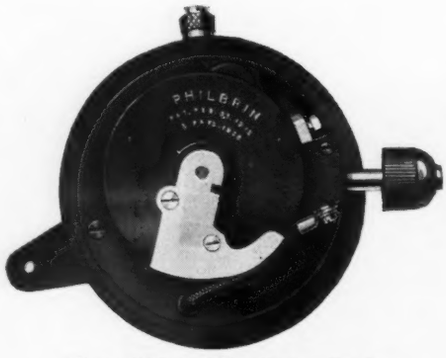
The distributor is mounted directly above the contact producing mechanism. The distributor blade does not make actual contact with the terminals that lead to the spark plugs, which are, of course, located in the cover or caps, but clears them by about .004 in., thereby entirely eliminating friction and wear on the terminals or the distributor blade.

The center stud of the distributor cap projects into a hole in the distributor blade, contacting with a concealed brush fastened to the under side of the blade. The distributor cap is held in place by specially designed Philbrin latches, which permit removal of the cover by one hand.

The single spark system, summed up, consists of a specially designed contact maker and interrupter; a distributor mechanism mounted on the same shaft; a non-vibrating heat and moisture-proof coil; an armored condenser and a special duplex switch.

The High-Frequency System

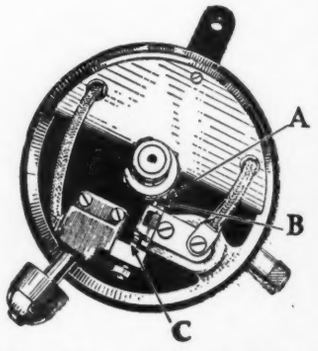
This system is designed especially for use in connection with poor grades of gasoline or in case of poor carburetor adjust-



The Philbrin Distributor Blade

ment and foul spark plugs. The high frequency system produces a continuous shower of sparks in the cylinder, insuring perfect ignition under the most adverse circumstances. This system uses the same coil and distributor as the single spark system. The circuits for the two systems are entirely distinct and separate, and cannot conflict with each other, they, however, using the same coil and distributor. The "High Frequency" system has its own individual condenser. The interrupter which supplies the continuous flow of sparks is contained within the switch case. This part of the mechanism controls the interruption of the battery current. The current is supplied to the interrupter through a polarity reverser, which reverses the direction of current flow each time the switch button is turned, thereby equalizing contact point wear.

Particular attention is called to the distributor blade. Because of its shape there is a continuous follow-up or succession of sparks after the explosive spark has been delivered to one cylinder, until that time



Single-Spark Contact Mechanism. A and B, Contact Breaker; C, Contact Points

when the forward edge of the distributor blade is within electrical contact of the distributing point of the next cylinder. By this means the first spark delivered to the cylinder is an efficient one and the "follow-up" sparks continue at intervals of approximately .001 sec. These sparks are perfectly synchronous. Even under average conditions it is a simple matter to use this system as a starter, by shooting a shower of sparks into that cylinder which happens to be on compression.

The Philbrin Duplex Switch allows the use of two battery sets if the user so desires it, although only one battery is necessary. Ordinarily a storage battery is used for the high frequency system, and dry cells for the other. The switch is provided with a lock, operating through the hub of the lever. When the switch is locked in the "off" position, it is impossible to remove the switch cover without completely breaking it, as the cover of the switch is locked to the back.

Giant Grip Non-Skid Chains

Challoner Co., 2800-3000 Wisconsin Street, Oshkosh, Wis.

Giant Grip Chains, designed to prevent the skidding of trucks, consist of units, each of these units being composed of six parts, the clamp, two eye-bolts, two hook-links and a cross-chain. These parts are heat-treated drop-forgings. The clamps are left attached to the wheel spokes and the cross chains are attached as needed.

A description with illustration of this Non-Skid chain appeared in these columns in the November issue, page 22.

Heat or Cold Causes Thermostatic Metal to Control or Regulate Devices

The development of G-E Thermostatic Metal by the General Electric Co. has put a new means for accurate control of cooling and electrical systems into the hands of automobile and accessory manufacturers.

This metal is so susceptible to temperature changes that a difference of one degree higher or lower will tend to curve or straighten it and always to the same extent. It may be used for temperatures as high as 500 degrees Fahr. By changes of shape it will make and break electrical contacts and even exert a force.

Its present use as a means of temperature regulation in furnaces, incubators and refrigerators together with its non-corrosive characteristics suggests its possibilities in carburetor manufacture as a means for mixture control as the engine warms up, for regulation of circulating water in water jackets and to regulate the relative charging current delivered to the storage batteries in warm and in cold weather.

As a result of its responsiveness to change of temperatures and the mechanical force developed, this metal is used to actuate various mechanism which tend to naturalize either the temperature change or its effect upon devices.

G-E Thermostatic Metal consists of two strong non-corrosive metals possessing a wide difference in coefficients of expansion, the widest difference possible for any known stable combination of metals. These two metals are firmly attached to each other throughout their entire length so that there is absolutely no slip of the one upon the other. Thermostatic metal can be cut, stamped or pressed into practically any desired shape, and when annealed will have all its orginal inherent qualities; moreover, it will not deteriorate nor take permanent set under applications of heat or force within definite practical limits. The metal is manufactured in various standard thicknesses ranging from 0.25 to 0.015 in., maximum width of 6 in. and maximum length of 36 in.

The deflection per degree temperature change besides being quite considerable is a constant for any definite piece of the metal. Since a definite and considerable opposing force is necessary to cause the metal to take permanent set, the metal can be depended upon when used in devices where extreme accuracy is required.

If the curving of thermostatic metal on heating or cooling is opposed, the metal will produce a mechanical force which is limited only by the force required to produce permanent set. For example, a piece of thermostatic metal one-tenth of an inch thick, 5-16 in. wide and 4 in. long will exert a force of 24 ounces (1½ lb.), on being restrained from bending when subjected to a temperature change of 100 deg. Fahr. The force exerted by this metal varies as the square of the thickness, directly as the width and as the square of the temperature.

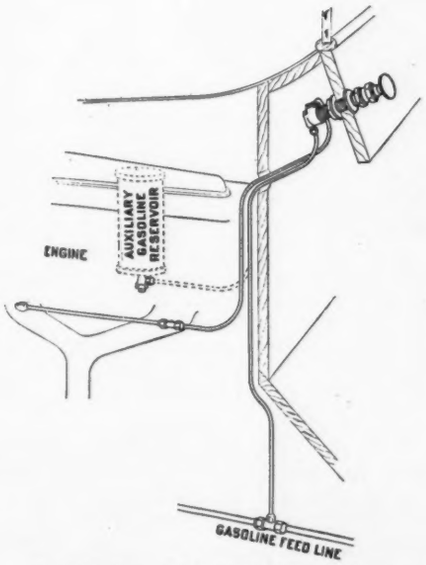
Tests have shown that the deflection resulting as one of the two dimensions, length or thickness, varies with a definite change in temperature. The width of the piece has no influence on the deflections resulting from temperature change. It has been found that the deflection for any given temperature change varies directly as the square of the length of the piece of thermostatic metal and inversely as the thickness of the piece. As previously pointed out, the deflection of any piece of metal varies directly as the temperature change.

Thermostatic metal is a product of the Ft. Wayne, Ind., Works of the General Electric Co. where the desirability of a metal with its characteristics arose from necessities in the construction of certain types of electric meters. This metal met the requirements so fully that manufacturers who had thermostatic and heat compensation problems adopted it as a matter of course.

Lunkenheimer Engine Primer

Lunkenheimer Co., of Cincinnati, Ohio

The Lunkenheimer gasoline engine primer is a device designed for conveniently expediting the starting of the cold gasoline engine, thereby conserving the energy of the starting battery or lessening the labor of cranking. The outfit consists of all piping and connections for conveying the gasoline from the supply pipe or vacuum tank to the primer pump, which is designed for mounting on the dash within reach of the driver, and the piping and connections necessary to convey the gasoline from the primer pump to the intake manifold at a point close to the engine.



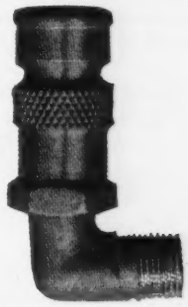
Installation of Lunkenheimer Primer

By operating the plunger in the primer pump, gasoline is drawn from the supply and furnished to the intake manifold. A slight turn of the plunger when it is pushed in holds it to its seat, and prevents the drawing of gasoline into the cylinders through primer pump when the engine is running. The price of the complete outfit is $6.

Ideal Primer for Ford Cars

Ideal Brass Works, Indianapolis

As no provision is made on the Ford car for priming in cold weather, either through priming cups or otherwise. This company is offering to the trade a device that attaches to the manifold and through which the engine can be primed the same as with a priming cup.



Primer and Economizer for Ford Cars

The device also admits auxiliary air to the intake manifold, which is claimed to increase speed and power and at the same time reduce gasoline consumption. The carburetor must be adjusted to give a rich mixture when warming up the engine in cold weather. When the engine is warm it uses more gasoline than necessary, but with this device, which is automatic, additional air is taken into the manifold above the carburetor. The device can be installed by anyone in a few minutes and is sold for $1.

Prest-O-Grip Anti-Skid Chains

The Rowe Company, Plantsville, Conn.

The chains are offered in units for attaching to alternate spokes of the truck wheel, each unit consisting of a clamp, two lock links and a chain. The clamp is rubber lined and permanently attached to the spoke. Two drop-forged lock-links fasten the chain to the clamp, these being locked or unlocked quickly and positively.

A description and illustration of these chains appeared in the November 15th issue, page 23.

Rajah Priming Spark Plug

Rajah Auto-Supply Company
Bloomfield, New Jersey

This well-known plug is of the same construction, material and workmanship as the regular Rajah Plug, but has, in addition, the priming cup, which is attached to the shell. A special terminal is furnished with each plug, for connecting and disconnecting the wire quickly. Genuine imported porcelain and electrodes adaptable for battery or magneto ignition are used. The plug has but four parts. The price of this plug is $1.50.

Why Cold-Test Oils Are Necessary on Many Motor Trucks in Cold Weather

Data Furnished by the Vacuum Oil Company

When winter is as warm as summer, or all lubrication systems are of the positive feed type, one grade of lubricating oil will suit all seasons—until then, cold test oils will be required on many cars in the winter months.

To meet mechanical conditions and secure correct lubrication, some cars equipped with force feed or full force feed lubrication systems, requires the use of heavier bodied oils in both winter and summer. These systems insure a positive feed to all friction points.

The chief factors governing the recommendation of oils of low cold test for winter motoring are as follows:

They permit of greater ease in the starting of the engine. This is because an oil having low cold test remains more fluid at the low temperatures and offers less resistance to the moving parts of the mechanism than would an oil of high cold test. The high cold test oil would be more affected by low temperatures, causing it to congeal and retarding the action of moving parts in starting.

Where oils of high cold test, or those which congeal under slight cold conditions are employed, the metal surfaces are oil-sealed one to the other in cold weather. It is necessary to break this cold seal of oil before a freedom of action of the working parts, one upon the other, is effected. It will therefore be readily understood why, if the oil upon these surfaces remains fluid at low temperatures, little or no effort is required to effect a freedom of action.

Another feature to be taken into consideration is the type of pump employed in the lubricating system and its relative position to the location of the oil reservoir. If the location of the pump is higher than the oil level in the oil reservoir, and an oil is employed in this system that will congeal in the reservoir at low temperatures, upon the starting of the engine it is possible that it will require quite a few minutes before the oil is limbered up by the temperature of the crankcase, before the pump can draw a sufficient quantity for circulation. This is especially true where plunger pumps are employed.

To guard against this condition and in such instances a low cold test oil is recommended for winter use.

Other conditions, such as exposed oil piping, exposed sight feeds and in cases where small piping or small oil hole drillings are employed, necessitate the recommendation of cold test oils for winter motoring.

Naceskid Chain for Trucks

Naceskid Service Chain Co. Trenton, N. J.

A new anti-skid chain guaranteed not to get into the drive chains or brake drums. The traction obtained with this device is said to be very effective. In attaching, no holes are bored in the wheels and no clamps are used—there is nothing but chains which are attached by hand.

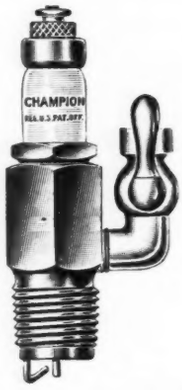
A rolling action during service affords an even wear on all sides of the chain and naturally lengthens its life and also prevents injury to the tires. If one short chain is lost or breaks, it is only necessary to purchase one similar chain to completely restore the attachment to service.

A description of Naceskid chains appeared in the November 15th issue of the COMMERCIAL CAR JOURNAL, page 23.

Champion Priming Spark Plug

Champion Spark Plug Company Toledo. Ohio

The Champion Dependable Priming Plug is designed specially to facilitate winter driving. The principle involved in this device is a simple but very effective one. A steel pet cock is attached to the regular



Champion Priming Plug

type of plug during the process of manufacturing. It is so designed as to connect directly with the sparking wires.

The operation necessary to start an engine with the aid of one of these plugs requires but a second or two. A drop of gasoline applied to the pet cock from a small oil can or a spoon will trickle down the sparking wires to the sparking points within the cylinder. A turn of the engine and an explosion results.

This particular plug is constructed to meet the severe requirements of winter driving and will successfully combat the decided changes in temperature.

The price is $1.25, only a trifle more than the cost of ordinary plugs.

Blood's Non-Freeze Liquid

T. L. Blood & Co., St. Paul, Minn.

This company has a non-freeze solution that is used without the addition of water, preventing the forming of any scale. The freezing point of Non-Freeze is 58 deg. F. below zero. It boils at 374 deg. F. Water boils at 212 deg., hence troubles with overboiling are eliminated. The liquid is non-evaporable and no replacement is necessary after it has once been put in the radiator if there are no leaks in the system. It is said to be harmless to the cooling system and not to attack the metal, or form any deposits that need to be washed out. It is claimed to contain no calcium chloride or other inorganic salts. Blood's Non-Freeze Liquid retails at $1.50 per gallon; $12 per dozen one-gallon cans is the trade price.

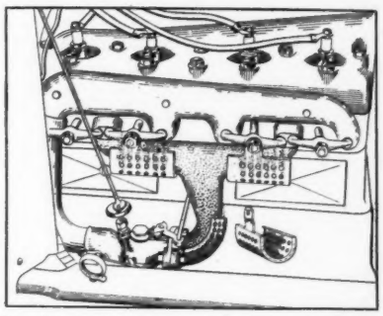
Gillaspy Manifold Heater

Davenport Vulcanizer Mfg. Co. Davenport, Ia.

The Gillaspy manifold heater and its supplies, manufactured and sold by this company, constitute a new means for facilitating engine starting in cold weather, without the use of hot water, wood alcohol, kerosene, or blow torches.

The Gillaspy heater is designed to do away with dangerous methods of warming up the manifold with flaming heat that might set fire to the waste oils in and around the engine or cause an explosion.

The holder is sheet metal and is arranged to fit almost any manifold on any automobile by adjustment. It can be quickly attached and detached. The quick attachable and detachable arrangement permits



Flameless Device to Heat the Manifold

igniting the heating material with a match at a distance from the engine, so that there will be no blaze such as a lighted match will make, in or around the engine.

The heating material is a chemically treated strawboard that burns without a blaze and is shaped to fit the holder. When a lighted match is applied to this material if becomes a live blazeless charcoal that will heat the manifold in about one minute. Thus, when the engine is cranked, the gas is drawn through the hot manifold and enters the engine as a vapor.

Never-Skid Truck Attachments

Never-Skid Manufacturing Company, 110 West Fourteenth Street, New York City

A new type of non-skidding attachment for dual-type truck tires. The cross pieces are built up of woven steel wire, which construction reduces the possibility of breakage and gives a better gripping surface. Turnbuckles in the chains that connect the crosspieces, allow for adjustment required through wear of the tires. Attachment is easily made with a special tool provided with each set. In ordering, it is necessary to specify the make, size and type of tire and the diameter in inches from center to center of the two sections.

A description of this non-skid device appeared in the November 15th issue of the COMMERCIAL CAR JOURNAL, page 22.

Fall and Winter Care of Storage Batteries

A New Device for Automatically Charging During This Season of Greatest Drain on the Motor Car Battery

It is exceptional for a private garage to be equipped to properly take care of batteries, although the battery is one of the most expensive individual parts of an automobile.

Cold weather and short days combine to drain the car battery of its energy, both in starting and lighting and at least as much energy must be put into a battery as is taken out of it. If the owner requires a greater output from the battery than his generator puts in, obviously a better way is needed to put that current in than leaving the engine running idle, or taking a trip into the country just to charge his battery.

An entirely new automatic car-battery "booster," for individual owners, or garage service, is the new Tungar rectifier, developed by the Research Laboratories of the General Electric Co., Schenectady, N. Y. It is designed to change the alternating current, found in most residence garages, into direct current which is required to charge a storage battery, and will give a starting battery sufficient charge over night to assure ample starting current the next morning, even though the battery be entirely exhausted the night before.

The discovery that has made the Tungar possible is really embraced in the small bulb in which the process of changing the alternating current to direct current takes place. This bulb closely resembles an incandescent lamp. It is filled with an inert gas and contains a tungsten filament and an "anode" of graphite.

The bulb is mounted in a black japanned casing with a perforated cap. This casing contains a compensator which reduces the alternating voltage without wasteful resistance, and also excites the filament in the bulb. In addition, the casing contains a fuse to protect against the reversal of the battery and other overloads.

All that is necessary is to attach the terminals to the battery and screw the attaching plug into a convenient electric lamp socket. It is unnecessary to disconnect the wires running from the battery to the lights, or other parts of the car, while charging. The device is self-starting and no skilled attendance is necessary.

There are two sizes of the Tungar rectifier for use in the private garage; the 2-amp., which will charge a 3-cell battery at a 2-amp. rate, putting in a long, soaking charge which is really better for the battery, or a 6-cell battery at a 1-amp. rate. The 6-amp. rectifier will charge either a 3- or 6-cell battery at a 6-amp. rate, or it will charge a 9-cell battery at a 3-amp. rate.

A storage battery, left in a partially discharged condition, will freeze over night, in zero weather, and be seriously damaged. If fully charged it will stand the severest weather in this climate. In the fall and winter, when it is too cold for touring and when the battery is called upon for its hardest service, is the time it should be wasted and frequently recharged, or "boosted" nights with an automatic rectifier.

Whiz Kleer Glass Paste

R. M. Hollingshead Company, Camden, N. J.

Whiz Kleer Glass Paste is designed to be applied to windshields to prevent rain, snow or sleet from collecting on the glass and obscuring the vision. The maker states that the glass is kept clear because the water is made to spread, thus causing it to run down in an unbroken sheet instead of in streaks.

Abingdon Motor Truck Bodies Three Designs Shown

The Abingdon Motor Truck Body Co., Abingdon, Ill., a concern of more than fifty years' experience in woodworking, whose line is established and favorably known to the trade, is offering some excellent truck bodies.

The body shown in illustration 10 is constructed with top and flare boards for general use. Dimensions back of seat, 43 in. wide and 64 in. long, with panel 11 in. high inside. The top is strongly constructed with four posts and solid slatted roof covered with best grade of oiled duck. It has oiled duck curtains with drop endgate and chains with heavy side braces. The frame is of hard wood properly braced and ironed in proportion. Top posts are strong and reinforced with metal, full length, braced to avoid vibration of top. The bottom has wear plates. Cushions and back are well upholstered. The body is painted black.

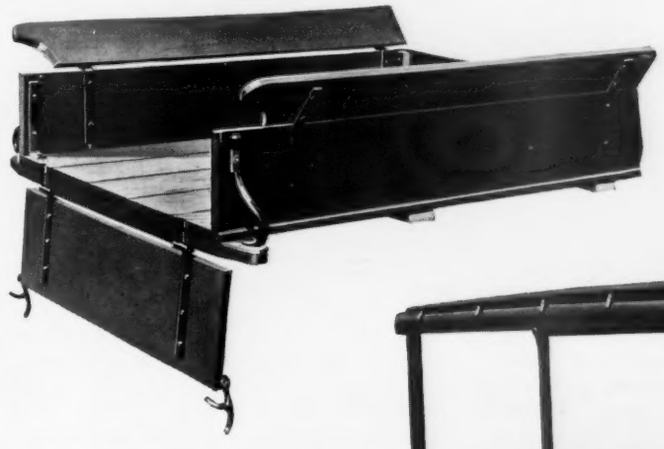
No. 40 shows cab top on No. 10 body in place of long top. Best materials—side and back curtains with windows, large glass lights in side panels, built-in type of windshield are the features.

No. 50 Ford Roadster Attachment

By removing the turtle back and bolting on with four bolts, which are furnished at no extra charge, No. 50 may be easily attached to Ford roadsters. The drop endgate is hung on stout hinges. The body is 36 in. wide, 56 in. long and 9 in. deep, with 5½-in. flare boards. The whole is strongly built, of good material, and is finished in black.

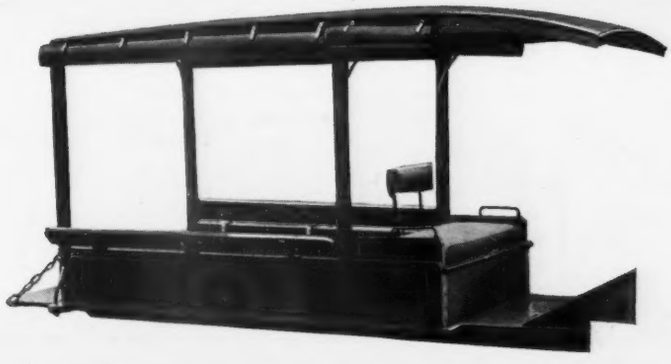
The prices are listed thus, f.o.b. from Abingdon, Illinois:

Type 1, $36.00 (less top $21.00).
Type 2, $46.00 (cab top separate $25.00).
Type 3, $7.25.



Ford Roadster Attachment
Is quickly attached by removing turtle-back of Ford Runabout and is held in position by four bolts.

Above is Type 2—Price, $46. It Consists of the Cab Top Mounted on the Flareboard Body.



On the left is the Type 1—A Four-Post Body Good for General All-Around Use.

Motor Trucks Busy at Camp Custer

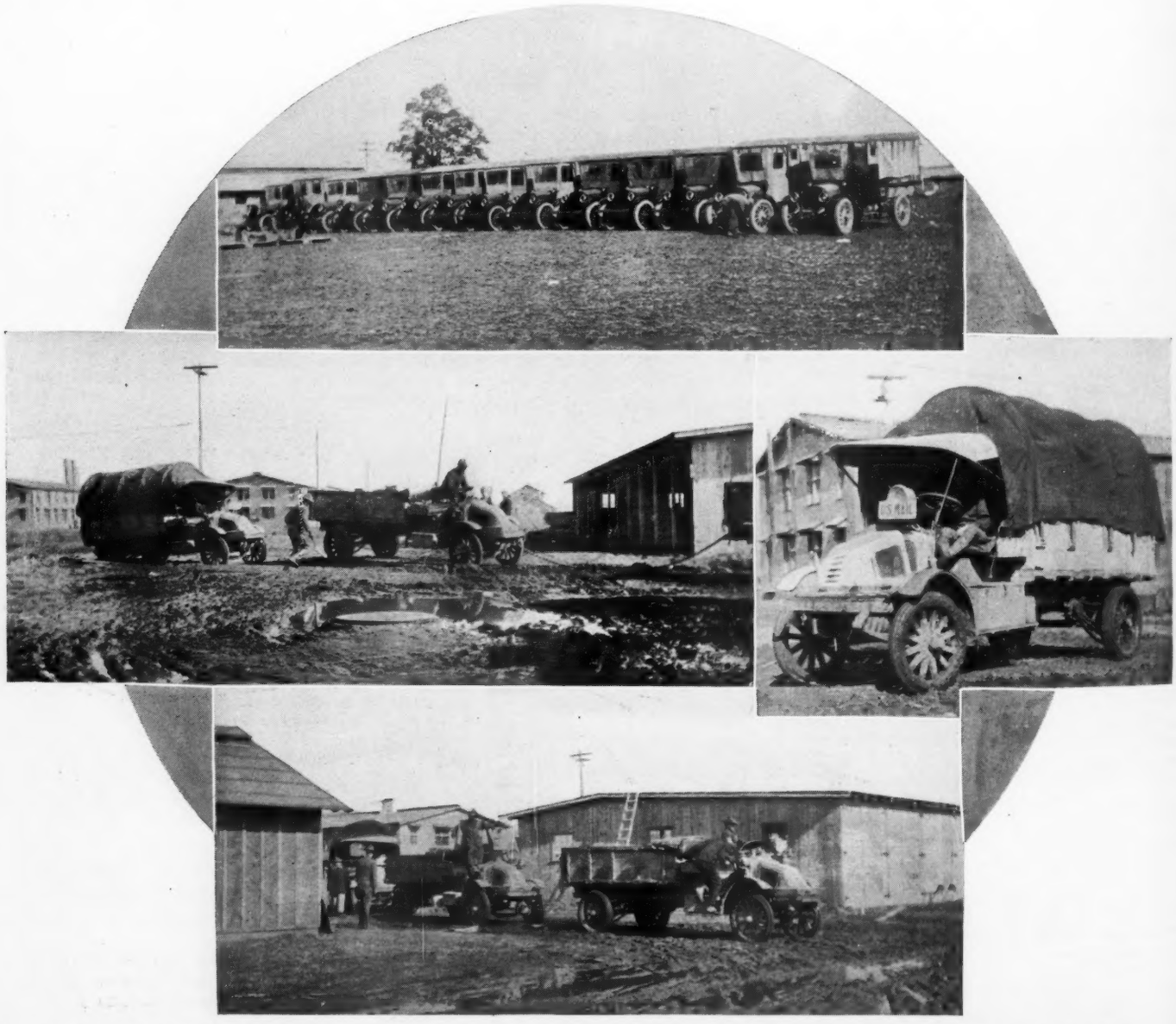
Three Hundred or More in Use at the Cantonment; Even Ambulances Are Pressed Into Service Occasionally

By C. W. SHAFER

CLERKS in the quartermaster's department at Camp Custer, Mich., call out the mules and wagons occasionally, but when they want some real work done they put one of the three hundred or more trucks at the camp into operation. Real results follow.

The efficiency and worth of these trucks was strikingly demonstrated during the latter part of October and the first of November when constant rains made the company streets almost impassable. In many places the mud was from three to ten inches deep and wagons mired so frequently that trucks were kept busy drawing them out. For the most part, during this period, the use of wagons was abandoned, but the trucks performed remarkably and did Herculean tasks. Even the trucks themselves were mired at times and other machines had to be called on for assistance. All of the vehicles carried a heavy chain for this "pulling out" work. An accompanying illustration shows two 1-ton Kelly-Springfield trucks, loaded with supplies, being dragged out of a mud hole in the center of the camp.

Trucks at Camp Custer are the sinews of the camp life. They were used in nearly every capacity. A concrete road, 22 ft. wide, runs through the entire length of the camp from the receiving station to the base hospital and over this nine miles transportation is constant. A private, who recently walked this distance, was passed by 124 trucks in less than the three hours it took him to make the hike. Supplies from the quartermaster's stores are moved, lumber is hauled, building materials carried through—in fact every sort of transporting service is put upon the motor trucks. One recently made the length of the concrete road, dragging a timber 30 ft. long and 12 in. square. This timber was urgently needed and the truck dragged it through in less than an hour. Two teams would have been required to carry the load and the moving would have taken half a day if not more. It is this saving of time, irrespective of the cost of operation,



The Value of Trucks About Camp Custer is Here Shown in Ambulance Work and Hauling Supplies, Under Adverse Conditions

that makes the use of trucks appeal to army officials. Besides figures show that maintenance and operation cost are 50 per cent. less than when horses and wagons are used.

An interesting thing has been done at Camp Custer with the ambulances. The 310th Sanitary Train possesses 14 G. M. C. 1-ton cars, with ambulance bodies. At first, when the camp was young, these were used only in drills and were well guarded at night. On sick and injured calls they made trips out of the small area around the base hospital and ambulance barracks. After several weeks, however, a major in the train decided that the machines could be used to advantage, and economically, in ordinary, every day business. Now the ambulances are used in conveying freight to and from the city of Battle Creek and over long distances. At the same time it is unnecessary to request or requisition a machine from the quartermaster's department. The idea has greatly facilitated the advance of the sanitary train's standing and the machines accomplish a great deal of work that would otherwise be left undone. Recently, when a party of 300 officers made a trip to Detroit, the ambulances were turned into passenger vehicles and conveyed the contingent to the depot five miles distant.

Such are the ways in which the truck is valuable in military life, principally because of the speed and facility with which the little details may be handled. The cost of operation is not considered. The upkeep is not figured. The whole idea is speed and the motor truck meets that idea With the truck army officials are breaking all precedents for results and are doing, in a day, throughout all the cantonments in the United States, an amount of labor which, without the truck, would require a month of effort.

Highways Transport Committee Gets Busy

Has Comprehensive Plans for Elimination of Railroad Terminal Congestion and Efficient Maintenance of Main Roads

By E. A. STEPHENS

A SINGLE week of quiet investigation of conditions at the capital has revealed a state of things that goes far to prove that the work of the efficiency expert is not confined to the factory or the commercial office. It has proved that the Government's prompt action in calling on skilled help in a time of National stress has had the effect desired and that administrative and advisory committees are already working at a high rate of constructive efficiency.

While this is true of all the various groups dealing with automobile industrial problems it is doubly true in connection with the Highways Transport Committee, a little group headed by Roy D. Chapin and including Geo. H. Pride, L. W. Page and H. G. Shirley, with A. C. Hargreaves as secretary.

In the few days this organization has been in existence it has tackled one of the biggest, if not the actually biggest and most important, problem which has been causing anxiety to the executive—that is the problem of relieving the railroads of a considerable portion of bulky freight and of reducing the present congested state at the terminal points.

The scheme is simplicity itself, but it has taken considerable working out in details. It provides for the transportation of all government war trucks from the point of manufacture to the port of embarkation under their own power, and moreover, loaded to their full capacity with munitions and governmcnt supplies.

Although matters have progressed so rapidly that the first convoy of loaded trucks will have reached an Atlantic port before these lines appear in print, preliminary work of a very thorough nature had to be undertaken before a wheel was turned

During the war England has transported trucks from the factory to the sea to the extent of 1,750,000 truck miles (not ton-miles) with such success, owing to a careful consideration of preliminaries, that the total loss through road accidents was under $2000, although the total truck values amounted to over $200,000,000.

With this fact before the Board a start was made by undertaking a route-finding trip from Detroit to Baltimore. The road was surveyed from all points, curves and turns were noted, gasoline supply stations were decided upon and suitable sites for camps were located. The next step was to prepare a special map on which everything of interest was indicated. This map is described as being the most complete thing of its kind ever produced and it is now in the custody of the quartermaster for reference as needed.

Letters were sent by the Committee to the highway engineers of every state, asking for co-operation in road maintenance throughout the country, and as evidence of the enthusiastic support afforded let us take Pennsylvania as an example.

W. D. Uhler, chief highway engineer, was asked to take care of the road beginning at East Palestine on the Ohio border, thence by way of route No. 204 on the state map to Rochester and from there by the Lincoln Highway right through the state.

Mr. Uhler's response was prompt and eminently satisfactory. He undertook to resurface the road where needed, to repair it where necessary and to maintain its full efficiency irrespective of weather conditions, by the help of a number of trucks with snow plow attachments. This work has started already and special steps have been taken to insure the road being in A-1 order throughout the record "driveaway."

It is a bit too soon to state the number of war trucks which will travel the main roads from West to East within the next few months, but let us assume that 35.000 is a very conservative estimate for the Class B or three-ton type, and then think for a moment of the number of freight cars released for the transportation of coal, steel and other necessaries. The total load capacity of these trucks will be around 105,000 tons and the railroads will be relieved not only of this tonnage but of the necessity of furnishing cars to transport the trucks themselves.

Another point that should be borne in mind is that this preliminary road work under military direction, will provide thousands of truck drivers with practical experience of untold value when they arrive "over there." We already train our men in trench work, the use of the bayonet and the mysteries of the gas mask, why not give them the opportunity of acquiring equal efficiency in truck driving under conditions similar to those they are likely to encounter at the front.

It is a big proposition which is being tackled in the biggest kind of way by picked men who are enthusiastic not only as to the immediate possibilities but who are convinced that the ultimate results will show that when calm comes after the storm the nation will continue to realize the immense step taken in solving the railroad freight problem under war conditions, and we shall have a road transport system in operation which will insure the fulfilment of the slogan "Keep the Home Tires Turning."

Relieving the traffic tension of the railroads means, obviously, that more normal transportation service will be resumed at a very early date, possibly in four or five weeks, and this in turn means that both car and truck factories will receive adequate supplies of material and coal.

To the truck and car dealer let it be said emphatically—Your interests are being looked after in Washington by men who know the needs of the industry, men who realize to the full the need for maintaining its activities without hurtful interference and men who are acting in an advisory capacity rather than in one of confiscation or embargo.

There is no need to be anxious, there is every reason for optimism as to the future of the trade in its various branches.

FEDERAL BEARINGS CO., Poughkeepsie N. Y., has recently closed a contract for Schatz Universal annular ball bearings with a European house that has branches in several South American countries. The initial order calls for a large Latin-American shipment.

Motor Trucks in Coal-Handling Service

This Concern Has Adopted Motor Haulage for Coal Deliveries, Using Both Trucks and Tractor-Trailers

By CHAS. M. SMYTH

UP TO a year ago last July the Colorado Fuel & Iron Co., one of the largest corporations in the West, and with head offices in Denver, made all fuel deliveries in and about Denver through contract only. At the time mentioned, when a renewal of the contract became necessary, the parties fulfilling the hauling contract demanded such a raise in prices that the fuel company decided to install equipment of their own and hire the men necessary to do the work.

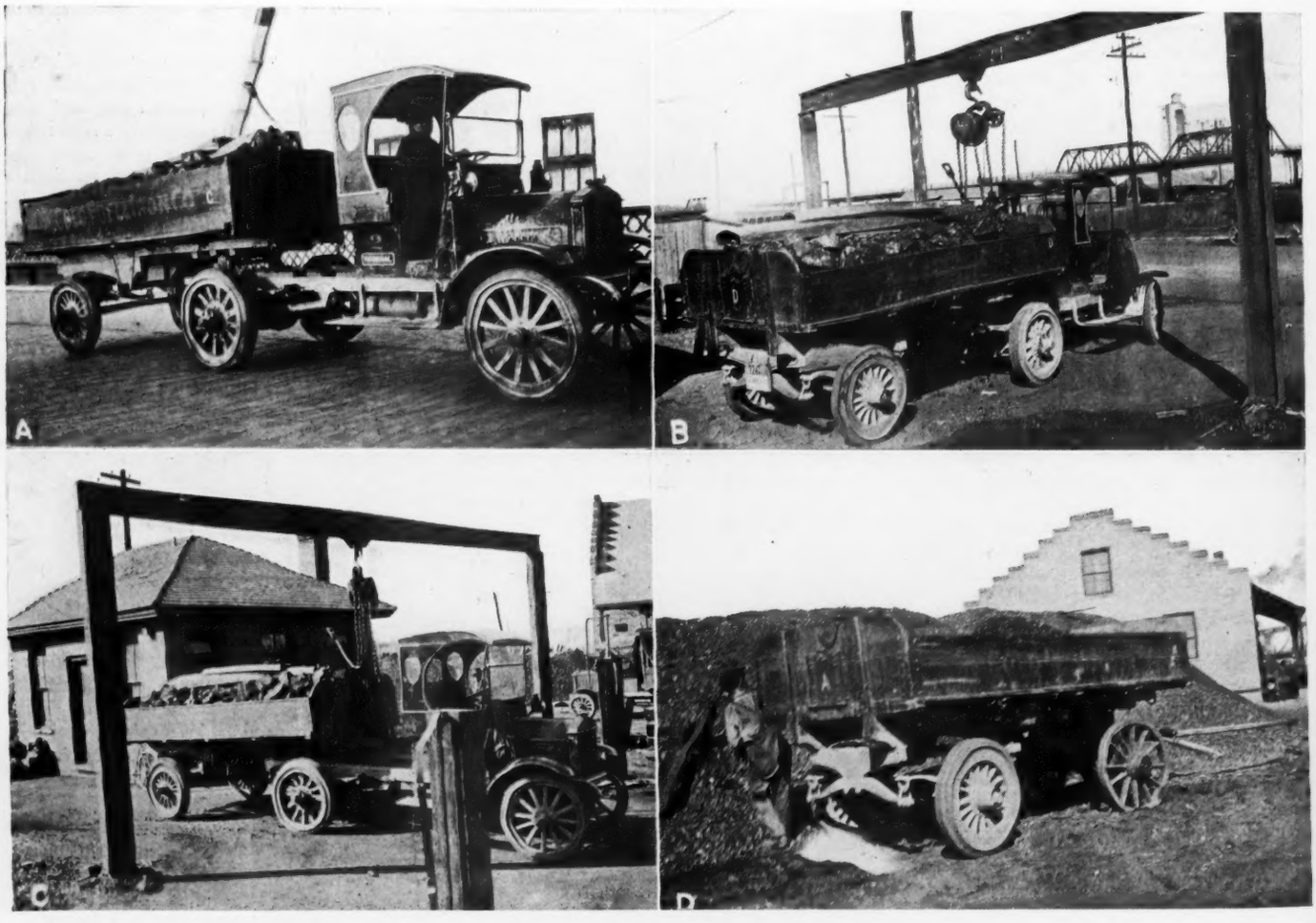
Because of the prodigious advance in cost of labor, horse flesh, feed and all products required in delivery maintenance, it would be most difficult to learn whether their venture has caused a saving over the former contract cost, or rather, what that contract price might be today. But to show what they are accomplishing and what success they are having with their various kinds of equipment might be of interest to others anticipating a similar move.

Besides an equipment of 80 sorrel horses and necessary wagons, they have installed a fleet of six Federal trucks of various models and capacities. They have one 3½-ton elevating dump truck with gates for dumping upon either side and capable of emptying over an obstacle 11½ ft. high. They have been able to keep this truck employed exclusively upon steam coal, but it is capable of handling small lump, nut or anthracite with equal facility. They also are using two 2-ton rear dump trucks which dump low to the ground and which will handle any kind of coal with a minimum amount of breakage, including lignite lump—the most difficult of all coals to handle.

But the most interesting part of their truck equipment is their 2-ton Federal tractors pulling semi-trailers of 4-ton capacity. They comprise two 2-wheeled trailers for each tractor with facilities for interchanging and allowing one trailer to be loaded and weighed while the other is being unloaded at the customer's designation.

Mr. Miller, manager of the corporation's coal department in Denver, who is responsible for delivery of all sales made from his department, conceived this truck equipment and believes the success he has had with it to date is because it has been possible to keep the tractors almost continuously on the go. The present disadvantage appears to be in the necessity of hand shoveling at the end of the route where the coal is to be delivered.

The problem of delivering coal presents so many difficulties peculiar to no other business that it will have to be dealt with very carefully to be made successful with the use of trucks. To merely supersede the horse and wagon and continue the slow and arduous handling of coal by hand shoveling does not lower the cost per ton of delivering it to the customer. Several coal selling firms in Denver claim to have



Federal Two-Ton Tractor With Four-Ton Trailer. Two of These Combinations, Each With an Extra Interchangeable Trailer, Are Being Used by the C. F. & I. Company, for Delivering Coal in Denver, Col.

Views B and C show chain-hoist trolley, where the empty and loaded trailers are interchanged. D shows one of the trailers that has been left standing upon the front running gear of a wagon beside a coal heap, where it is being loaded by hand shovelers

Two Views of a Federal Two-Ton Rear-Dump Truck, in the Act of Depositing Its Load of Anthracite Upon a Cement Driveway

proved that to their satisfaction. But it is most apparent that those firms looked at the accomplishments of the motor truck entirely from a mercenary point of view, and were unable to see the other advantages gained by truck installation.

A man does not expect a reduction of costs when he moves into a larger and more sumptuous residence. He knows the maintenance expenses will be greater than in the cottage where he began housekeeping. But he reasons that the larger and better residence will gain for him an added amount of esteem among his fellow men, and that the improved and more modern conveniences will be a source of satisfaction and comfort to his family.

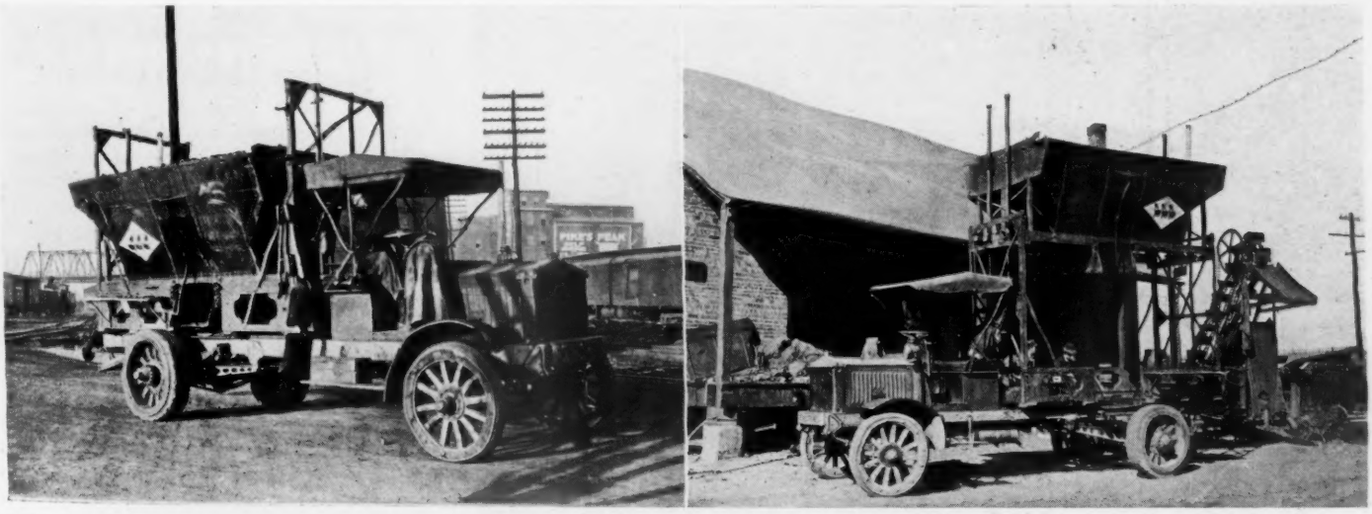
Likewise the installation of improved and modern delivery facilities by a firm, even though they be more expensive, will gain for the firm an added amount of esteem from its customers and a gratifying gain in business with others desiring to trade with a more progressive concern. People are no different in buying coal than when buying dry goods or furniture, and prefer to deal with a business house using modern and well kept motor trucks in preference to one using the slow and dirty horse delivery. How many would think of buying their goods of a firm using the old style ox team and cumbersome cart to deliver the goods at their door? As the speedier horses were an improvement in both appearance and service over the old ox cart, though they were in many cases more expensive, so is the motor truck an improvement over the best groomed horse delivery.

The management of the Colorado Fuel & Iron Co. was cognizant of the foregoing facts when it decided to install motor trucks for delivery wherever possible. Mr. Miller, manager of deliveries for this firm, after investigating the eastern field, believes the truck delivery methods he is using are sufficiently improved to enable him to reduce the cost per ton to below that of horse haulage.

Bituminous lump and all grades of lignite larger than nut must usually still be shoveled by hand to minimize crushing and pulverizing. But steam coals, most grades of nut coal and all anthracite coals may be handled with mechanical coal loading devices and with automatic dump trucks. The fact that most of the domestic coals are lump of one grade or another is what causes difficulties in truck service. Customers complain if the coal after it reaches the bin appears to be fines or "run of mine" grade when they are paying for clean lump. And dumping a 2-ton load from a high truck body to a cement platform or upon the ground has a tendency to crush the coal more than by placing a shovelful at a time upon a smooth chute and letting it slide slowly to the pile.

With the 2-ton Federal rear dump trucks now used by the C. F. & I., the rear or exit of the truck is quite close to the ground when the front end is elevated and the fall is not great enough to cause excessive crushing. With the tractor and semi-trailer unloading problems are still slow because the coal must be unloaded by hand into a chute, but at the loading end of the route many difficulties are solved.

The use of two semi-trailers for each tractor permits the leaving of one trailer in the coal yards to be loaded while the other is being delivered and unloaded for the customer. It requires a crew of three yardmen and a team of horses to keep two tractors continually on the go. When a tractor arrives at the yards with an empty trailer the driver runs it beneath a block and tackle of 3-ton capacity on an I-beam runway. Beside him is a loaded trailer all weighed and marked for delivery with the front end resting upon a strong wooden horse. The driver of the tractor hooks the chain tackle into rings on the front of the



Federal Three and a Half Ton Truck With Elevating Body, in Use by Colorado Fuel & Iron Company, in Denver, Col. Capable of Dumping Through Window Over Eleven Feet From Ground. Right View Shows Chain-Bucket Loader in Background

empty trailer, pulls the pin from the lower end of the kingbolt and raises the front end of the trailer sufficiently to release it from the fifth wheel on the tractor. The tractor pulls from under the empty trailer and backs to beneath the loaded trailer. The empty trailer is lowered to a wooden horse, the chain tackle released and moved on the I-beam to the loaded trailer, which is raised just enough to remove the wooden horse support and is then lowered to the fifth wheel on the rear end of the tractor. The whole operation may be performed in almost quicker time than it takes to tell about it—to be precise, in about four minutes, though it has been done in less time. The driver of the tractor in the meantime has been handed his order slip and is off again with his load.

The front end of the empty trailer is then lowered by one of the yardmen to the front running gear of a wagon and is hauled by horses to the spot in the coal yards where it is to be loaded. There it is left standing while the horses are transferred to a trailer that has been loaded. They pull the load to the scales where it is weighed and checked and from there to beneath the chain tackle on the I-beam, where it is left standing upon the wooden horse to await the arrival of the next tractor. The trailers are all interchangeable so that the first tractor in may take out the loaded trailer. The ground beneath the I-beam crane is cemented so as to be approachable in all kinds of weather.

The two tractors are 2-ton Federal chassis equipped with a fifth wheel over the rear axle. The four trailers, or 2-wheeled semi-trailers, are not of any particular manufacture, but are conveyances built over from horse trucks once owned by a brewery. The rear wheels were cut down in the fuel company's shops and equipped with Firestone tires and Timken bearings, thus strengthening them and making them more easily handled. They are capable of carrying four tons. The front running gears were left as they were and are used in handling the trailers by team about the yards. New trailers of reliable make would have cost the firm $1100 each, while the cost of these makeovers stood them not more than $350 apiece.

It is found more convenient to handle the empty and loaded trailers in the coal yards with a heavy team of horses than with the use of the tractor. The tractor having four wheels and the trailer two makes the conveyance a thing of six wheels and with such an arrangement it becomes complicated and sometimes difficult to pull and back into just the position desired for the trailer. A team of horses with ordinary front running gear of a wagon will handle it more readily.

Concerning a conveyance of six wheels it might be argued that there would be an excessive wear and consequent increase in cost of tire service. But on the other hand to have the load distributed almost equally over six wheels will cause much less wear and tear upon both bearings and tires than in instances where the load is so placed as to throw nearly 80 per cent. of its weight upon the one rear axle of a 4-wheeled truck. On a 6-wheel conveyance carrying a 4-ton load much lighter tires may be used with better service than the heaviest tires will give where two tires carry most of the burden. Firestone tires are used on all C. F. & I. trucks.

The system of handling coal with motor trucks used by this firm is not claimed to have reached perfection and will of course be improved from time to time, but it appears to be the best that has so far been devised by any coal handling firm in the West and is worthy of being emulated by other firms in similar occupation.

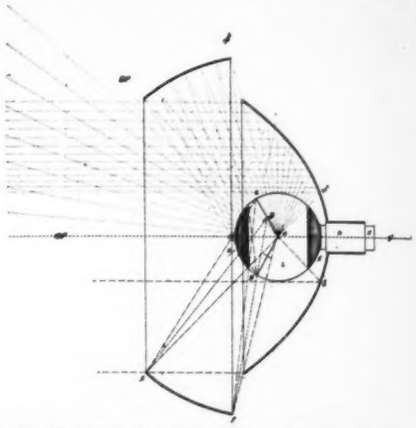
JONES MOTOR CAR CO., Wichita, Kans., will increase its capitalization from $500,000 to $2,500,000, following a unanimous vote of its directors at a recent meeting.

Motor Car Specially Equipped to Repair All Damages to Aeroplanes

Cellbeam Concealed Spotlight

A recently designed electric searchlight is being marketed by the Cellbeam Mfg. Co., 1101 Bedford Ave., Brooklyn, N. Y. It is a compact lamp that provides both concentrated and diffused illumination. The concentrated beam of light is said to extend 500 ft., and near objects are illuminated by a diffusive glow of indirect and transmitted light that is devoid of direct filament glare.

The Cellbeam searchlight contains a light-source of high candlepower that is



Illustrating the Principle of Reflection in the New Cellbeam Spotlight

surrounded by a parabolic reflector within what are considered to be its most useful degrees. A translucent screen over the front end of the bulb transmits rays of light that are reflected to it from an auxiliary reflector placed in the proper position around and outside of the direct beam reflector. This provides a diffused light for general illumination. The visibility of the glaring filament is said to be totally annulled by this combination of reflecting surfaces.

The Cellbeam unit provides a small, serviceable spot-and-trouble lamp that can be concealed in the side-door pockets of the automobile. It is wired to the battery cells of the car. Each lamp is finished in nickel, has silvered reflectors, a switch in the handle, external focusing adjustment, 5 ft. of flexible cord, and a standard 6-volt nitrogen bulb. The price, complete, is $8.

Gearese Motor Lubricant

The Swan & Finch Co., 165 Broadway, New York City, offers Gearese, a new transmission and differential lubricant for cars and trucks. It is said to be free from any injurious acid or alkali, to possess good cohesive and adhesive properties, and to maintain a uniform consistency in all temperatures. Gearese is put up in non-leakable, screw top cans. The prices range from 25 cents per lb. for 5-, 10- and 25-lb. cans to 6 cents per lb. for barrels containing 400 lb.

CHIEF MOTOR CO., LTD., Toronto, Canada, is planning to construct a new plant and will increase its capital in the near future. J. G. and Harry S. Erd, of the Erd Motor Car Co., Saginaw, Mich., are operating heads of the company, which will manufacture trucks, tractors and marine motors.

Motor Truck Design and Construction Made Plain

Advantages and Disadvantages of Different Types Discussed

By C. T. SCHAEFER, Member Society Automotive Engineers

This is a series of articles by this well-known writer, covering in a non-technical way, the various constructions now current practice in commercial car design. Preceding articles covered General Types of Chassis, Two and Four-Cycle Engines, Types of Cylinders and Their Parts, The Valve-Operating Mechanism and the Crankcase, Engine Lubrication, The Engine Cooling System, Carburetion and Carburetors, High-Tension Magnetos, Low-Tension Magnetos and Battery Systems, Inductor Magnetos, Governors and Speed-Controlling Devices, Clutches, Universal Features of Design, Transmissions, The Universal Joint and Differential, The Final Drive, Front and Four-Wheel Drives, Brakes, The Front Axle, The Steering Gear, The Frame, Power Plant Arrangement and Its Mounting, Springs and Suspension, Motor Truck Wheels, The Muffler, The Fuel Supply System, Controls, Tires, Rims, and Steering Mechanism. The Care of Motor Truck Tires.

Electric Lighting and Starting On Commercial Vehicles

The Advantages and Disadvantages of Electrically Equipped Trucks

PART XXIX

IS electric lighting and starting equipment justifiable on commercial cars? Many engineers consider it an unnecessary complication; others hold that with it economy as well as convenience is gained. A resume of the advantages and disadvantages may prove interesting especially since the Government specifications for the Model A trucks included this equipment.

Many mechanical problems must be considered in selecting electrical equipment for commercial cars. While these units have worked out satisfactorily for passenger vehicles that are equipped with pneumatic tires, it is a question whether they will endure the greatly aggravated vibration of motor trucks having solid tires, stiffer springs and compelled to travel cobblestones and rough roads. Such considerations as frequent trouble from inability to withstand hard usage, are very important and may more than offset the advantages gained through the use of such equipment. It is true that some of these equipments have worked out very satisfactorily on commercial motor cars; however, they are generally designed to meet these more exacting conditions. They are sturdier and stronger built devices, while the battery must also be of such capacity as to permit frequent starting and must have some special mounting to resist vibration.

The arguments for and against electrical equipment, covered in the following, are the result of a general study of this subject and are not based on the opinions of makers of these units.

Four units generally comprise the complete electric system—the ignition system, the generator, the starting motor and the battery. Ignition systems were previously described* and will not be considered in this article. The generating system consists of a generator or dynamo, its drive and mounting and also an output regulator and reverse current cutout. The starting system consists of an electric motor, its drive and mounting and a suitable switch for starting purposes. The link between the two systems is the storage battery which serves in effect as a reservoir for accumulating electricity.

The generators of different systems now in use vary in construction or type, some having a permanent and others an excited or wound field. Fundamentally, there are three types of generators in use—shunt wound, compound wound and differentially wound generators. The field itself may either carry simple or compound windings. The armature revolving between the poles of the field generates electric current, the output of which is governed by the output regular. The method of generating electric current was described previously in the chapters on magnetos. The reverse current cutout prevents the flow of current through the generator from the battery.

The starting motor which takes the place of the ordinary hand crank is operated by current from the battery. This unit is similar but opposite to the generator in that instead of motion producing current, current flowing through the fields energizing them and causing the armature to rotate, produces motion. Speaking loosely, electricity that has been pumped into the batteries by the generator, runs out through the motor. If the motor is properly interconnected with the engine, it can be made to turn the latter over until it starts.

A definite amount of work must be done to produce electricity, and that work is done by the generator. The electrical energy that the generator produces is stored in the battery for use when the generator itself cannot supply the current as when the engine is to be started.

Advantages of Electric Lights and Starter

The advantages on a commercial vehicle of electric lights and starter are as follows in their order of importance:

1. Greater economy due to saving gasoline and time when many stops are made by not keeping the engine running.

2. Increased life of the engine as shutting it off at each stop, eliminates considerable needless wear.

3. Saving of time over hand starting, increasing the actual working hours of the car and operator.

4. Better lighting and easier driving for night work and fewer accidents from rear light going out.

5. Better finished appearance of cars for certain classes of work.

To these may be added the possibility of getting more for certain types of cars for special service, where the advertising value is considered.

Disadvantages of Electric Lights and Starter

The principal disadvantages in equipping commercial vehicles with these units are:

1. Additional first cost and added complications which the driver does not comprehend.

2. Increased maintenance cost and interest on additional investment.

3. Decrease in engine accessibility in making repairs, thus increasing the cost of these repairs.

4. Unreliability of certain parts, such as the storage battery and the possibility of these units being maintained far below their original efficiency.

5. The effect of vibration on units not originally designed for commercial car service.

6. Inability to keep the battery sufficiently charged owing to frequent starting and stopping.

7. Battery and other electrical troubles aggravated by the average commercial car driver not being familiar with the construction and care of the electrical system.

On trucks that have many stops to make such as house to house delivery, starters are no doubt desirable, considering the high cost of gasoline, as the operator will invariably allow his engine to run rather

*May, June and July, 1914.

than crank it when making a stop of a few minutes. Stopping the engine will cut down the fuel bills.

But whether the starter will save time over cranking seems to be disputed. Various arguments are advanced covering the point of economy.

Any type of delivery car and even some of the large motor trucks make more stops during the day than the average touring car and from the point of economy the commercial car would seem to have the greater need for a starter. Moreover, the starter is also a convenience and saves energy. Some imagine that the starter will start the engine when the driver cannot start it. This is not true unless the engine is too big to be spun by hand. The average truck engine can be spun easily by the average driver and if the gasoline mixture is getting to the cylinders and the spark is all right, it can be started as many times by man as by a self-starter. A self-starter can do no more than man, but it does conserve his energy.

Some claim that the time saved with a starter even when stops are numerous is relatively small compared with the time the operator usually wastes in other directions. Cold weather must also be considered, which may average four months per year, when it is really advantageous to let the engine idle and prevent the radiator from freezing and to keep the mixture warm for a good start.

Stopping will increase the life of the engine, but in the absence of a starter with a bonus system to encourage economy, the driver would not let the engine run idle for long. Where, especially on the heavy vehicles, the drivers' union compels the owner to provide a helper on each car, there is still less excuse to keep the engine running.

Without question electric lights are preferable to oil lamps, but it is for the owner to decide, especially whether they are worth their slightly greater cost if there is little operating at night. Accidents that may be traced to the lighting system will be reduced, if the lighting system is maintained at its original efficiency, which is doubtful on a commercial car.

Where appearance is a large factor, the additional first cost and maintenance are usually disregarded. Under certain conditions, especially on light deliveries, electric equipment adds considerable to the sales value. Conditions here approximate those of a touring car and there is no question of that feature in this case.

Disadvantages Discussed

The first cost of a commercial vehicle is what engineers have been striving to keep down and simplicity aids low first cost. Electrical equipment will add a certain amount of weight and expense that must be paid by the purchaser and as a motor truck is purely a business proposition, its prime object being to carry goods at the lowest cost, the starter must save time and money. From the mechanical viewpoint it means some complications that the average truck driver does not comprehend. He is not an electrician and the best electrical equipment requires some electrical knowledge at times.

The question resolves itself into whether starters can save enough in fuel and time to offset the increased maintenance cost and pay an interest on the additional investment. It should also be remembered that this added equipment will render the engine more inaccessible for repairs, thus adding to their cost.

There are certain objections from a mechanical standpoint. The battery seems to be the weakest unit of the entire system, for this is subject to jolting and jarring, which shortens its life perceptibly even with the best of care. Spring mounting devices may overcome this difficulty, but a vast amount of education is necessary before the average truck driver will know how to take care of a storage battery. Even after this lesson has been taught, there still exists that human element which is responsible for the rapid destruction of commercial vehicles through improper care, handling and neglect.

Frequent starting and stopping is another factor which also must be given consideration, as the battery must be of ample capacity to provide for the number of starts made during a day's work. The generator must be of sufficient size to keep the battery properly charged and it must be also of the simplest type.

The difficulty resulting from the driver's lack of knowledge will probably diminish as use of the system becomes more universal.

Opinions of engineers differ as to the final solution of the problem. At present the question of electrical equipment seems to be up to the public, as the personal view of the purchaser appears to be the greatest factor. All makers supplying electric units as regular equipment will omit these if requested to do so. Makers, who do not regularly equip their vehicles with these units, will supply them, if the owner will pay the difference.

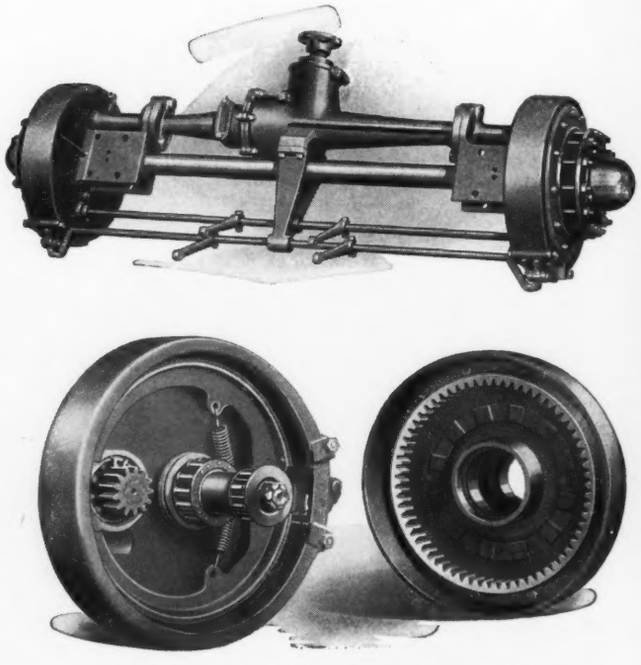
The battery seems to be the troublesome unit and the weakest point of the entire system. So far as the lighting is concerned, the problem may be solved by sending current directly from the generator to the lamps, similar to the Ford car, but without its irregular lighting characteristics. The starter problem is more aggravated, but may be solved in some as yet unfound, but equally simple, way.

New Series Russel Axle

The Russel Motor Axle Co., Detroit, Mich., is putting on the market a new series of internal gear drive axles. The most noticeable change is the removal of the yoke that, on former models, was keyed to the dead axle and supported the differential housing, taking the driving torque.

The new series has no direct connection between the dead axle and the jackshaft. The torque is taken through one side of the jackshaft housing itself, which is fixed rigidly to the heavy brake housing. The other end of the jackshaft housing is mounted flexibly in the opposite brake housing, by means of an ingeniously designed support consisting of a tapered adjustment acting on a split bushing. This provides a connection that is free from the possibility of play, maintains the alignment of the shaft and is oil tight, yet this end of the jackshaft is free to relieve itself of any strain it may meet. The two axle members are completely separated by this construction.

To prevent the spokes from becoming loose in the hubs, the hub flanges have been increased in diameter and the size of the bolts increased. The pinion adjustment has also been changed. Instead of the bolts previously used, two clamp bolts of nickel steel are used, making positive locking easier and the use of a key on the adjustment makes a special spanner no longer necessary. Another feature favoring longer life for the axle is the placing of the jackshaft forward of the dead axle. In this way the driving reaction is almost directly opposed to the dead load, tending to relieve it. The resultant load on the wheel bearings is much less when driving ahead than even when standing still. The capacities being delivered are 1 to 1½ tons.



New Russel Internal-Gear Drive Axle

Tractors Time Savers in Handling Lumber

By WARREN EUGENE CRANE

THE problem that is uppermost in the minds of the business men controlling large American manufacturing institutions today is: "How shall we cope with the ever-rising cost of production?" In order to keep on an equal footing with competitors and to dispose of their products at a profit, they are forced to stop all leaks in production cost, such as duplication of labor and the delegation of work to men which machines could do more efficiently.

One of the most serious leaks in the operation of a saw mill has been the handling of the product as it comes from the mill to the yards, dry kilns and cars. This branch of the operation has added a huge total to the cost of the finished product because of the manual handling and rehandling as well as the large investment in horses and lumber trucks. This expense varies considerably in various mills, but generally is found to be out of proportion to other costs entering into the manufacture of lumber. As the men are scattered over considerable territory in the yards and mill, it has been impossible to give each man direct personal supervision, and the result is a big waste in time through shirking and misdirected effort. The more extensive the operations, the larger is the number of men required and the greater is the investment in horses and trucks, as well as the upkeep on trams.

A host of devices have been placed upon the market during the past five years, designated to handle lumber. In a majority of cases, however, the excessive cost of the equipment and the special tracks and overhead construction work required has more than outweighed the possible benefit and savings intended. The scope and elasticity of these systems has been limited because of the necessity for special tracks.

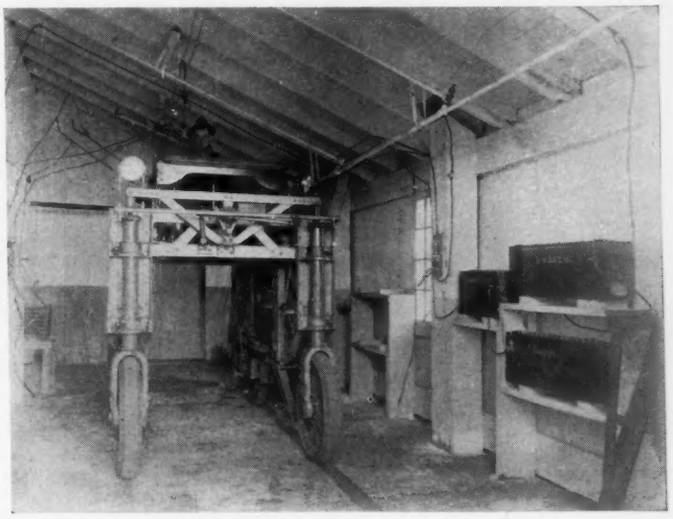
The Ross Electric Carrier has done away with a large amount of lumber handling expense, tram expense, cost of horses, feed and manual labor. It has been in operation in some of the largest mills in the Northwest for over two years, and the efficiency of the machine has been proved by the fact that a number of the concerns have placed orders for additional units.

The first cost of a carrier is much less than an equal capacity of trucks or dollies, horses, harness and barn equipment. In addition to this the operating cost is much less than that of horses, especially under present conditions with feed costs soaring on account of the war. It has the following advantages: First, it travels four times as fast as a horse. Second, it carries as high as 2000 to 3000 ft. of timber on each trip. Third, it requires no rest on long hauls. Fourth, it eliminates entirely the wear on trams caused by the calks from horses' shoes and iron-wheeled trucks. For example, the Hoquiam Lumber and Dock Co., which depends on horses for its hauling around the yards, requires 200,000 feet of lumber a year to repair the docks and platforms. Fifth, it makes possible the elimination of yard trucks, by using bolsters under the timber. Sixth, the cheapness of bolsters permits the storage of an unlimited number of loads without a shortage of trucks as in the old way. Seventh, it eliminates the expense of handling empty dollies.

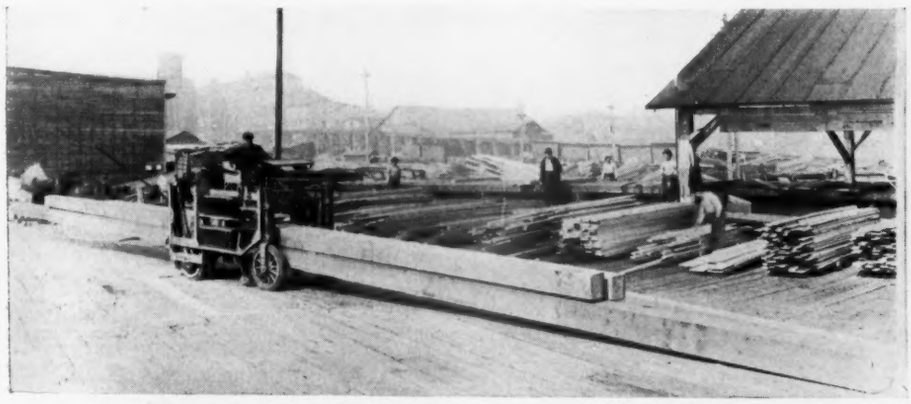
An electric carrier runs over a load of timber on bolsters which are not more than 3 ft. wide nor more than 4 ft. in height. Two metal lips, or hooks, on each side of the carrier swing out when it is standing at the proper place above the bolsters and clutches them securely. A cable then lifts them up with the power from the motor. No lumber truck or dolly or lifting crane is required. The load is built entirely on the two bolsters, which the hooks seize, and the only thing necessary is that the pile of timber be kept within certain height and width limits. The entire operation of picking up the load can be accomplished in 10 seconds of time. The operator of the machine need not leave his seat while picking up or leaving a load. After the machine has been loaded, it quickly proceeds to its destination, drops the load and is ready immediately to secure another.

The electric carrier requires no new tram or expensive track. The regular tramway that is suitable for horse-drawn trucks also accommodates the machine. There is a very material saving in tram wear. The carrier has solid rubber tires, which means that the trams will last till weakened by decay, rather than be torn to pieces by the horses' shoe calks and worn by the dragging of heavy loads over them on 2-wheeled lumber trucks.

There is no limit to the hours that an electric lumber carrier can be worked, either day or night. It can be operated by one man, and it has been found after several years of investigation that it can save at least 4 horses and 3 men and the necessary trucks. Some of the mills using them report a saving of as high as 5 men, 12 horses and the elimination of 200 lumber trucks.



Ross Electric Lumber Carrier in the Charging Station at the Mill of the Crown Lumber Company, Mukilteo, Wash.



Ross Electric Lumber Tractor Hauling 72-ft. Timbers Around the Yard

An average load carried by an electric lumber carrier is 3000 ft., and timbers up to 100 ft. in length have been handled without trouble. One machine has the capacity to handle all the cut of a 100,000-ft. capacity mill, including the rehandling that is necessary under ordinary conditions. In actual service the machine has handled as high as 200,000 ft. per day.

The normal speed of the carrier is 8 miles per hour. When empty, while returning after depositing a load, it will develop a speed of 10 miles per hour. When under an extra heavy load, its average speed is 7 miles an hour. Under normal working conditions the machine will travel from 30 to 40 miles per day, while on long hauls the mileage increases.

Close-up View of an Electric Lumber Tractor

The normal rating of the motor is 6 horsepower. Under heavy strain for short periods it will develop three times this power, and has proved able to climb 5 and 6 per cent. grades. The power is applied by friction clutches for either driving the machine or hoisting the load. The controller provides 3 speeds forward and 3 reverse, without the use of any resistance to waste current.

The carrier is operated by means of two sets of storage batteries. One set can be recharged, while the other is in use on the machine. It requires 10 minutes time to remove one set of batteries and to put another in its place. These can be recharged on the ordinary 110-volt direct-current used by any mill for lighting or power purposes. In a majority of mills this current is developed simply as a by-product and the cost is very small.

The wheels of the carrier are furnished with rubber tires 36 x 6 in. in the rear and 34 x 5 in. in front.

The Crossett Western Lumber Company of Wauna, Oregon, operates a mill with a capacity of 75,000,000 feet and specializes on car and cargo shipments. This firm uses 4 Ross electric lumber carriers—the machine above described—to haul huge Douglas Fir and Western Hemlock timber around the yards. The operating cost, including a driver, averages $8 per day; while the expense resulting from 6 horses hauling the same timber averages $20.74 per day.

"The lumber carrier has been costing us about 6 cents per 1,000 ft. to handle the lumber from the chains to the yard or planers, wherever it may be delivered," said H. S. Mitchell, the manager. "The upkeep of the carriers is not very expensive. On the second one we purchased, we have not had to replace any of the tires up to the present time, but will probably do so in the next 90 days. We have operated our first machine over a year since we put a set of hard rubber tires on it.

"We change batteries morning and night on all our carriers except the first one that we bought. We do not change the batteries on this one, but simply charge them at night. We think that a second set with a machine is preferable, as it takes only a few minutes to make the change, and the extra battery can be charged during the daytime."

The St. Johns Lumber Co., of St. Johns, Oregon, operates a Ross electric carrier with which it handles an average of 250,000 ft. of lumber per day.

"The machine is all right," said N. E. Ayer, president of the company. "It is doing everything we expected it to do, and its capacity seems to be unlimited. At the present time it is handling all the lumber from our sorting chain, which amounts to about 175,000 ft. a day. In addition to this it is taking all the loads that have been sent out to the cars as fast as they are wanted. We believe that the tractor is as much an innovation and as great a help to the lumber manufacturers as the log turner which came into the market a few years ago."

The Crown Lumber Co., of Mukilteo, Washington, is operating two electric carriers with excellent results. Their operating cost averages $7.64 a day each. The company figures that each machine replaces 6 horses that would cost $300 each. The officials claim that the average useful life of a horse in hauling timber on dollies is 4 years, while the animals are a total loss at the end of 8 years. They also state that their lumber carrier saves them $50 to $75 a month at a very conservative estimate.

The Portland Lumber Co., of Portland, Oregon, is operating two electric lumber tractors. Since their installation it has sold 21 horses and run its mill and yard with 25 less men. Seven of the men whose services were dispensed with were drivers, while the other 18 were workmen who were employed to move trucks. This company uses the carriers around the yard with a great economy in time and money. In common with other lumber companies, it finds that the operating cost averages $8 a day for each vehicle. The company has carried big timber 72 ft. in length with ease, and expressed satisfaction with the results obtained.

One of the most important reasons for the use of the electric carrier is the fact that many companies are short of freight cars. If a car comes in and they have no electric carrier, they are forced to put the entire crew of their plant to work moving trucks. This means a loss, as it causes a curtailment of the entire production of the mill.

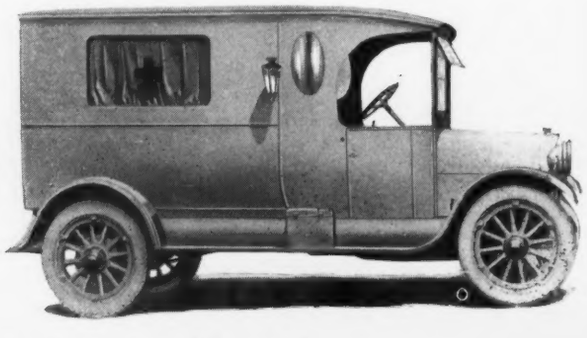
H. F. Weatherby, of Seattle, made a careful investigation of the lumber situation in the Northwest based on actual operations of 18 months, and these are his conclusions: "It costs between 20 and 30 cents per 1,000 ft. to handle lumber in a yard with the old style horse method and 6 cents per thousand with the electric machines. I have found that the average saving in operation costs is 70 per cent."

The motor carrier is revolutionizing the methods employed in many mills and yards in the Northwest, and it is predicted that the horse, with his calks that pierce the wooden docks and platforms, will be a relic of the past.

Goodyear Tire & Rubber Co., Akron, O., is issuing a series of instructive bulletins designed to help the users of solid truck tires. Eight bulletins are included in the series, which is entitled "Saving Dollars on Truck Tires." Each bulletin is devoted to some phase of tire abuse as overloading, speeding, driving in car tracks and on rough roads, neglected cuts, improper use of non-skid devices and wheel irregularities, etc. They point out in a convincing manner that solid truck tires are not merely so much rubber fastened to the wheel, but are built to fill a definite need just as pneumatic tires are.

A Neat Ambulance Body

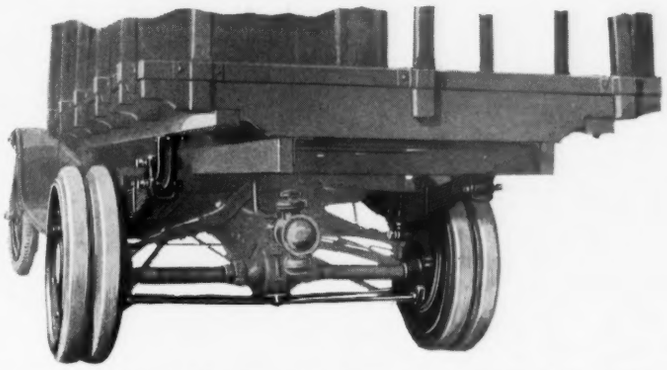
This ambulance body is a product of the Lansing Body Company, Lansing, Michigan, formerly known as the Lansing Wagon Works. The body is style No. 143.



Olson Internal-Gear Units

Each of the "Olson" internal gear driven attachments for transforming a Ford into a truck of 1-, 1½- or 2-ton capacity embody in their construction the basic principle of the well-known "Olson Unit," which is to allow the axle shaft to take the driving torque only and to carry the load directly onto the wheels.

In the "Olson" attachment, offered by The Swedish Crucible Steel Co., Butler Avenue and Grand Trunk Railway, Detroit, the Ford rear axle construction is left undisturbed. After removing the wheels special cast steel housings are bolted onto the rear axle housing flanges. These housings carry the outside race of a large 12-in. ball bearing, made up of 1-in. balls. These bearings are capable of supporting a load of seven tons each. The inside ball race of the bearing forms, on its inner face, an internal gear and is bolted to the steel truck wheel.



Rear View of a Ford Equipped With an Olson Heavy-Duty Truck Unit

On the end of the Ford axle is mounted the driving pinion, which meshes with the large internal gear and transmits motion to the wheel. The original axle roller bearings are removed and the end of the axle is supported by the "Olson" housing with a double-row ball bearing. The truck load is supported by means of the original cross spring and two large semi-elliptical springs, oscillating on a large pin mounted on the "Olson" auxiliary housings—the load being carried through the large ball bearing directly onto the wheel. These springs are connected to the truck body by means of spring hangers and shackles, no auxiliary frame being used.

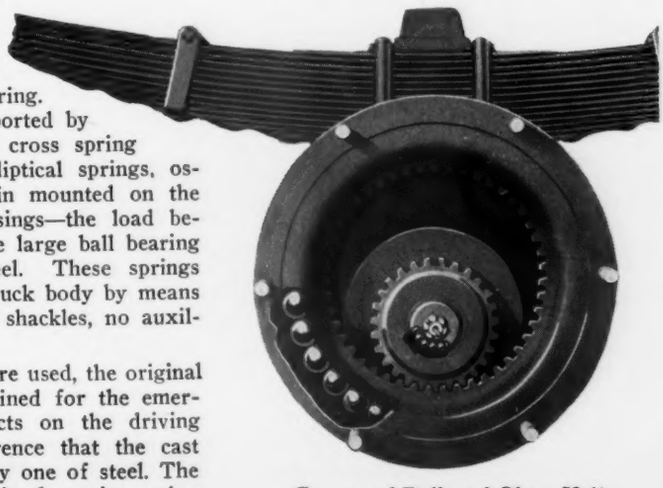
Two sets of brakes are used, the original construction being retained for the emergency brake, which acts on the driving pinion, with the difference that the cast iron shoe is replaced by one of steel. The service brake is internal, 16 x 2 in., acting on the wheels and is operated by means of an auxiliary pedal and brake shaft mounted on the Ford frame, the original transmission brake pedal being removed.

The emergency brake lever and service brake pedal are so connected that when pulling the lever, the service brake also operates and can be locked into position, although the service brake can be operated independently of the other.

The attachment is supplied with a drive and frame extension made in different lengths and giving the purchaser a choice of wheelbase ranging from 100 to 166 in., to suit his particular needs.

The "Olson" extension, used on the gear-driven units and which has been on the market for over two years, is interesting in that the extension shaft is in line with the original drive shaft, thus decreasing the angle between crankshaft and drive shaft. The universal joint is still next to the transmission case and no cross-member is necessary to support the extension.

The frame extension has an adjustable feature, permitting it to adapt itself to a different wheelbase with very little change. The original frame is reinforced by means of truss rods to take care of the increased load and wheelbase. The rear axle is also provided with double truss rods bolted to the auxiliary housings, and a set of radius rods is added to the Ford assembly.



Gears and Roller of Olson Unit

All the parts comprising these attachments, with the exception of springs, tires and balls, are turned out in the foundry and well-equipped machine shops of the company, steel being the only material used in their manufacture. All the gears are cut from cast steel blanks and the ball-races carefully heat-treated and ground to a polish.

The list prices of the Olson internal gear trucks are as follows: 1-ton truck unit, $350; 1½-ton, $425; 2-ton, $500.

The two-ton truck carries dual tires as standard equipment, size 28 x 3½ in.; price complete, $500. The 1½-ton model is offered with gear ratio of 10:1 and 32 x 4-in. single tires at $425; or with 28 x 3½-in. duals and ratio of 7:1 at $500. The 1-ton costs $350 and has a ratio of 7:1 and 32 x 3½-in. solid single tires.

Silverite—A New Metal

A new development in the alloying of aluminum with other metals is announced in the production of "Silverite." This metal is composed of a mixture of aluminum and copper, zinc and steel in varying proportions according to the requirements. The alloying of steel with aluminum is somewhat radical and at first thought seems to be impossible, yet the makers of "Silverite" claim to have succeeded in accomplishing it, and the resulting metal has a specific gravity of 3.1, a claimed tensile strength of from 40,000 to 45,000 lb. per sq. in. and a compression resistance of 100,000 lb.

The color of the metal is silver-white, hence its name; it is said not to tarnish in the air, to be unaffected by weak acids, and only slightly by salt water. The alkalies, however, attack it, as is true with all aluminum alloys. Made up into articles for general use such an aluminum is employed for, it has the additional advantage of lower gravity, greater strength, better color, is easily machined and electroplated.

The greater tensile strength of "Silverite" is due not only to the constituents of the alloy, but also to the fact that it is cast in molds made of a composition material that is said to withdraw the heat rapidly from the metal, thereby reducing crystallization to a minimum and making a casting of the close, even grain. The Wm. G. Milner Mfg. Corp., 1700 Broadway, New York, is the producer.

New Willard Storage Battery

For years storage battery makers have been struggling with the problem of adapting rubber for insulation in the motor car battery. Rubber has the durability necessary for protection of the plates, but this very virtue presents an obstacle in practice for solid rubber would prevent free circulation of the electrolyte and decrease the voltage necessary for reliable starting. Perforation of the rubber was resorted to, but that raised new difficulties, it being impractical to make perforations

Magnified Section of the Threaded Rubber

which would not allow "bridging" or "treeing" of the active material from plate to plate and consequent degeneration and ultimate destruction of the battery.

Many devices have been tried out, such as introducing other separators in addition to a perforated or solid rubber insulation, but this again increased the size and weight of the battery beyond the limits which have been found commercially practical.

The problem was then to use rubber without decrease of voltage, without increasing battery size, without holes that

The "Still Better" Willard Battery

would allow the active material to bridge and without adding to the number of parts.

In solving this problem the Willard Storage Battery Co., Cleveland, O., departed entirely from the idea of boring holes, and resorted to the use of thousands of tiny threads—196,000 to an insulator—which serve as wicks and thus permit the circulation of the electrolyte—something entirely new. These threads are imbedded in the rubber and are only as long as its insulation is thick—piercing it from surface to surface. The battery solution is drawn through the threads by capillary attraction—but there are no holes through which a contact can be established from plate to plate by "treeing."

Before the Willard company made general public announcement of the battery with threaded rubber insulation, 35,000 of them had been in use over two years. The kind of service they have been giving may be judged from the performance of one of them in Georgetown, British Guiana, where the extreme heat usually limits the life of wood separators to a year or less. After twenty-two months of hard service it still is right on the job, apparently good for another long period of real work.

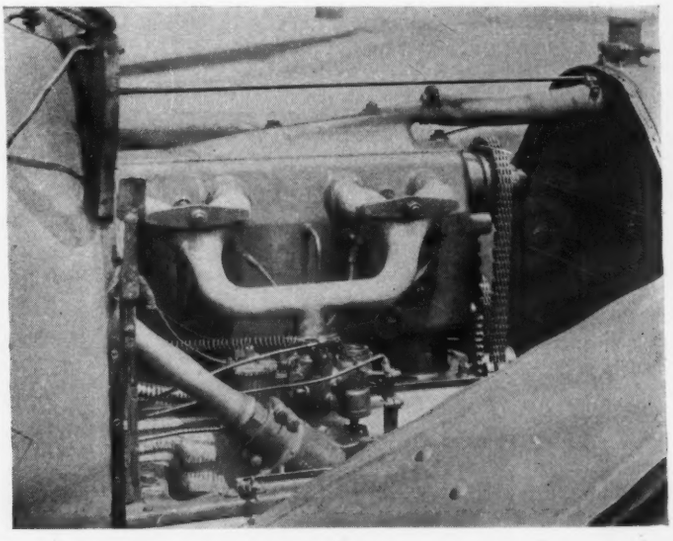
Meco Engine Has Rotary Valve

The Meco rotary-valve engine, made by the McCausland Engineering Co., Pennsylvania Bldg., 15th and Chestnut Sts., Philadelphia, Pa., is the design of Charles E. Duryea and is claimed to be practically "fool-proof." It has about 85 less parts than the ordinary six-cylinder poppet-valve engine, which simple construction eliminates springs, poppet valves, camshafts, guides, tappets, etc.

The body of the engine, from the crankshaft up to the cylinder head, differs little from the conventional design. It is the valve that is unique in design and operation, there being but one valve whether there are four or six cylinders. It is claimed that there is positive valve action at any speed. The valve, which is cylindrical in form, is externally and internally water cooled and revolves on top of the cylinders. There are as many ports or openings in the periphery of the valve as there are cylinders.

The valve, the cage that surrounds it, and the cylinder block are made of the same material, so that contraction or expansion does not affect its action.

Water is forced through the valve, which is hollow, cooling it in the same manner as the cylinder walls. A film of oil, forced through the cage, always surrounds the valve. It is claimed that this valve will actuate perfectly at an engine speed of 4000 r.p.m. A Meco valve engine that has run over 140,000 miles is reported to be still in good condition and in daily use.

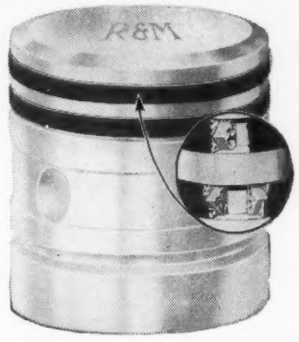


External View of the Meco Rotary-Valve Engine, Designed by Chas. E. Duryea.

R & M Conform Piston Ring

A piston ring that is claimed not to leak under compression is being manufactured by the Modern Electric & Machine Co., Indianapolis, Ind. These rings are known as R & M Conform rings and are made for any type of piston.

Each ring consists of three pieces. Two of these pieces are placed together—one on the top of the other. A "V"-shaped opening, that exists when the two pieces are in position, is filled by the third piece, which forms the inner part of the ring



R & M Conform Piston Rings in Place

and prevents any escape of the explosive force. The inner or "bull" ring is not subject to any wear against the cylinder walls and does not have to be replaced. It is claimed the other parts of the ring have high wearing qualities and conform to the cylinder walls.

Conform piston rings are said to prevent any of the unexploded gas from passing into the crankcase. Spark plugs also give good service as there is less carbon, and the motor accelerates quickly.

INDIANA RUBBER & INSULATED WIRE CO., Jonesboro, Ind., has presented to all employees who have been in its service for one year or more, a life insurance policy through the Metropolitan Insurance Co. of New York. The amount of the policy is in accordance with the number of years of service, but will be increased from year to year, as each employee grows older in the service. All employees have the privilege of naming the beneficiary.

Hendricks One-Ton Unit

With the Hendricks attachment, the Ford car can be quickly and easily converted into a 1-ton truck. The entire Ford front is used without alteration.

The complete truck weighs 1950 lb., the attachment weighing 960 lb. The drive is through a Whitney detachable-link chain. The steel sprockets are interchangeable and have a ratio of 2.1:1 or 1.75:1. The rear axle is 1⅞-in. square vanadium steel. Timken or Bower roller bearings are used.

The Complete One-Ton Hendricks Attachment

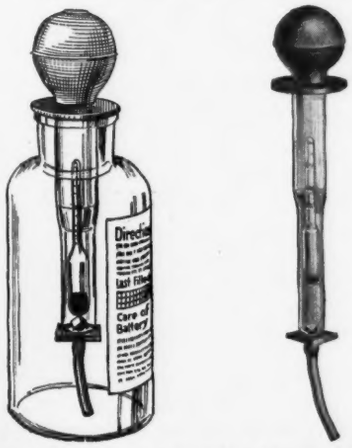
Both brakes are the internal expanding type, lined with Raybestos. The foot brake is on the rear wheels and the emergency brake on the jack shaft. Vanadium-steel springs are used without center bolts.

The truck wheels have 32x3½-in. pressed-on tires. As optional, either 34x4-in. Motz cushion tires or 35x4½-in. pneumatic tires can be obtained. The frame is 4-in. 5¼-lb. channel steel and has a total length, back of the dash, of 11 ft. 1½ in. and a width of 2 ft. 6½ in. The wheelbase of the truck with this unit is 124 in. Ninety per cent. of the load is said to be carried on the rear wheels.

This 1-ton unit for Fords is offered by the Hendricks Mfg. Co., First Ave., S., Seattle, Wash.

Hydrometer and Battery Filler

The Workrite Mfg. Co., 5606 Euclid Ave., Cleveland, Ohio, manufactures a hydrometer embodying a number of novel features. Perhaps the most important feature is that there is no rubber plug in the bottom of the hydrometer. A rubber tube is attached to the bottom, which tends to eliminate any chance of the connection coming out and spilling the acid and breaking the float.



Workrite Hydrometer and Combination Outfit

A small rubber cube placed in the bottom of the hydrometer acts as a cushion for the float when forcing acid back into the battery. It also prevents the float from blocking the outlet. Rubber collars at the top and bottom of the glass prevent it from striking the ground when dropped and it can be laid on an uneven surface without danger of rolling off. The price of this instrument, by mail, prepaid, is $1.

The Workrite Co. is also putting out a combination hydrometer and battery filler outfit. This consists of a jar in which the hydrometer is kept. The jar is made dust and evaportion proof through a large rubber collar and is filled with distilled water, making a clean and convenient receptacle in which to keep water with which to fill the battery. It is claimed by the makers that a very high quality of rubber fittings is used and the bulb capacity is large. The price of the combined outfit is $1.50.

Capitol Make-A-Motor-Truck

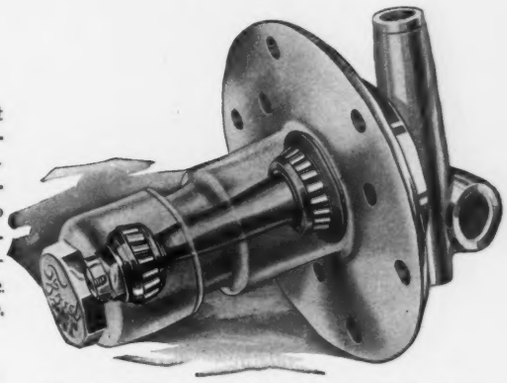
It is the claim of the Capitol Truck Co., 524 N. Capitol Avenue, Indianapolis, Ind., that its product, the Capitol Make-A-Motor-Truck unit, has a superior drive and that this attachment is the only one using the entire Ford chassis.

The Make-A-Motor-Truck is equipped with a spur gear drive and no chains or sprockets are used in its construction. The wheels are cast steel. Both the Ford and Make-A-Motor-Truck axles are mounted on annular bearings—six in all—and Titanic boltless springs, guaranteed against center-breaking, are used. Power is delivered centrally between two wheel bearings. The direct drive gears are guaranteed for 50,000 miles. The gears are enclosed in the wheels and it is said that one lubrication lasts six months. The truck is built very strong so that it can also be used to haul a trailer truck. The wheelbase, when attached to a Ford model T, is 126 in., and the over-all length when attached to the same model is 185 in. The weight of the attachment is 1050 lb., with a carrying capacity of 2000 lb. The price is $425 f.o.b. Chicago.

Wright Ford Spindle Bearing

The National Bearings Service Co., Broad and Brown Sts., Philadelphia, Pa., is putting out a roller bearing for Ford front-wheel spindles. This bearing is made by the Wright Roller Bearing Co., and is similar in design to the bearings now used on many commercial and passenger cars.

The bearing itself is unique in that it has no "cage" or retaining mechanism to hold the rolls in the raceways and is thereby enabled to use a large number of rolls which is said to increase the load carrying capacity of the bearing.

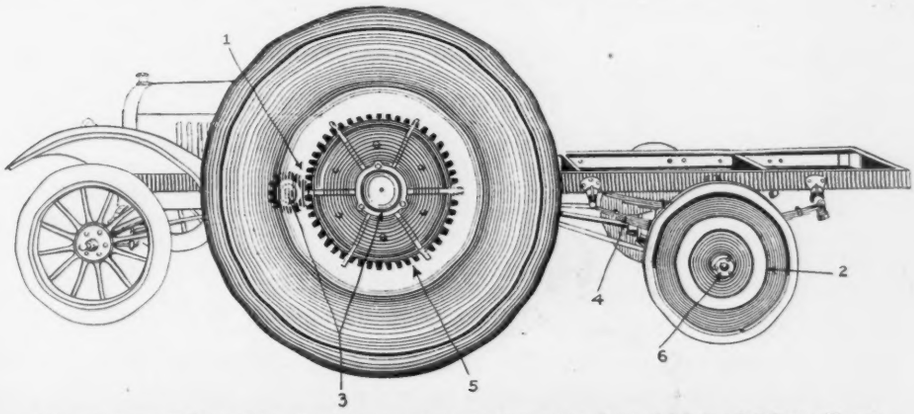


Phantom View of a Ford Spindle Equipped With Wright Taper Roller Bearings

As shown in the accompanying illustration, the bearing fits the Ford spindle with no mechanical change and is easily put in place. It tends to keep the Ford front wheels parallel, thus reducing tire wear and difficult steering due to disalignment.

The price per set of four bearings, for both front wheels, is $10.

FORD MOTOR CO. has already shipped its first consignment of tractors to England. The company expects to make shipments regularly until the entire quota of 7000 tractors has been completed, as production is now standardized.

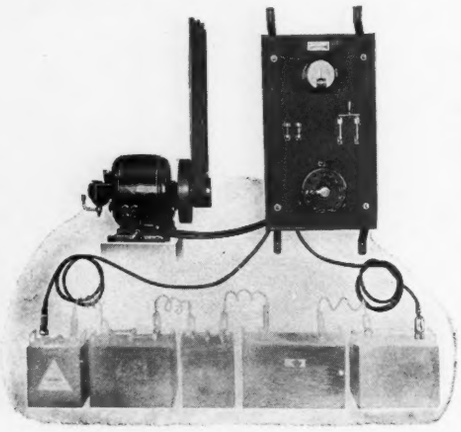


Showing the Direct Spur-Gear Drive That Features the Capitol Make-A-Motor Truck

Main Battery-Charging Set

The Main Electric Mfg. Co., 500 Aiken & P. R. R., Pittsburgh, Pa., is offering an outfit for charging lighting, starting, and ignition batteries used in automobiles and in similar service. Since but from 1-3 to 1 hp. is required to operate the Main battery charging outfit, the cost is small. A line shaft, engine, or other power is used to drive the dynamo.

The dynamo is shunt-wound especially for storage-battery charging. It has liberal size commutators and brushes. The brushes are self-lubricating, the bearings are of



Main Battery-Charging Set No. 3

the oil-ring type, and the oil reservoirs are of ample capacity. A flywheel pulley is attached and a sliding base for belt adjustment is furnished. The dynamo is attractively finished in baked black enamel. This complete outfit, known as set No. 3, gives 800 watts and 25 amperes when charging one 1-volt battery.

The switchboard is slate, with iron supports for easy mounting. It has a large D'Arsonval double-reading ammeter, heavy switches and fuses and a rheostat for controlling the charging rate.

The price complete, with instructions for operation and care, is $140 f.o.b. Pittsburgh.

Heath-Duplex Ford Converter

The Heath-Duplex attachment has a special frame and a folding body. The tonneau of the Ford touring car is made to slide off and the delivery body unfolds after it. The delivery body folds up under the rear seat when the tonneau is replaced and is said to be entirely hidden.

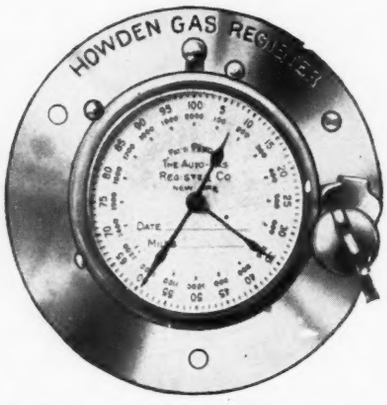
The Heath-Duplex body can be attached in a few hours and remains permanently on the car. When unfolded the box is 37 in. wide, 63 in. long and 11 in. deep. The body is wood and the braces, hinges, etc., are steel. The capacity is 1000 lb. 1000 lb.

This attachment is said to increase the strength of the car by making it more rigid. The McCord Mfg. Co., 2587-2637 Grand Blvd., E., Detroit, Mich., is the producer.

The Howden Gas Register

The Howden gas register can be used on automobiles, trucks, tractors, airplanes, motorcycles and motorboats. It is designed to register the total gasoline consumption, and to record the amount of fuel purchased during the month. By comparing the speedometer reading with the gas register, the mileage per gallon can be ascertained.

The two black hands on the dial register the total gasoline consumption and a red hand records the number of gallons purchased during the month. Around the dial four levers are placed, each serving



The Face of the Howden Gas Register

a different purpose. Pulling one lever advances the black unit hand 10 gal., pushing another down advances the black unit hand 1 gal., pulling still another advances the red hand 5 gal., and by first pushing this particular lever back, 1 gal. at a time is recorded on pulling it out slowly. The fourth lever is pushed upward to release the wheel for resetting the hundred hand.

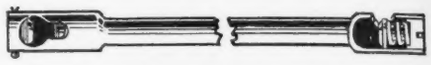
A tumbler lock in unit with the device controls the mechanism. When attaching, the bezel is removed and a pen and ink record made of the date and speedometer reading. The lock prevents the records of the register from being changed.

Three screws fasten the device to the instrument board. Packed in a leatheroid box, the price is $10. The Auto Gas Register Co., 51 E. 42nd St., New York City, is the manufacturer.

Ford Worm Steering Gear

A ball-bearing, floating-shaft, worm steering gear for Fords, including a steering link with a spring shock absorber, is being produced by the E. H. Sprague Mfg. Co., Omaha, Neb.

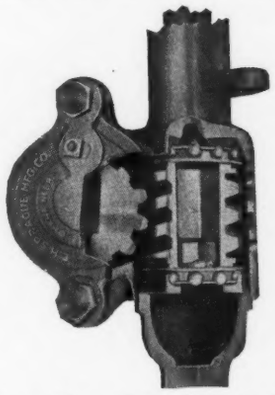
This steering attachment is applied after the old steering gear parts are removed



The Special Drag Link Which is Part of the Sprague Steering Outfit

from the Ford. The worm gear is slipped over the shaft after all the other operations are completed, and is fastened with bolts and screws.

By removing a plug from the cap on the main bearing of the device, the housing



The Worm Gear of the Sprague Steering Device for Fords

can be filled with heavy transmission oil for lubrication. Adjustments are made at the factory. The Ford drag link is too long for the new attachment, therefore, a new one of proper length and increased ber, while the live member drives, thus allowing easy access to the differential and strength is supplied. This link has spring sockets designed to take up wear and protect the steering gear from shocks.

The price of the complete outfit is $15. The drag link is sold separately, however, for $3 to those who desire it.

The Heath-Duplex Attachment in Use by a Farmer

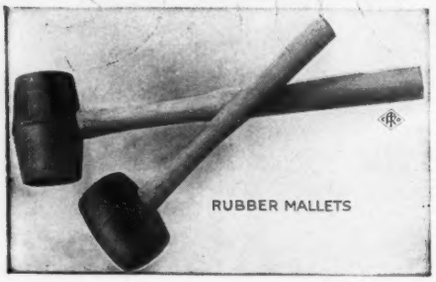
J D Mica Spark Plug

This plug is made by the J-D Spark Plug Co., Toledo, Ohio, for motorcycles and other air-cooled engines. It is designed to withstand excessive heat and to resist the absorption of oil. It is also claimed to be unbreakable and compression leakproof. It is sold for $1 in ½-in. and ⅞-in. sizes.

Thermoid Rubber Mallets

The Thermoid Rubber Co., Trenton, N. J., is manufacturing, for use in automobile work, two sizes of rubber mallets.

The use of a rubber mallet in place of a metal hammer prevents injury to paint, woodwork, brass or metal and also prevents



Comparative Sizes of the Rubber Mallets

damage to a tire and is a great aid both in taking a tire off the rim and putting it on again.

The rubber mallet of the Thermoid Rubber Co. is made only in one grade, which is a tough compound designed to withstand rough usage for a long time. The handles are made of selected second-growth hickory.

Two sizes are made, the smaller selling for $1.25 and the larger for $1.75.

Lauraine Magneto Brought Out in Two Models

A new, standard-type magneto, made in two models for 4- and 6-cylinder engines, is being produced by the Menominee Electric Products, Inc., 50 Church St., New York City. It is an independent high tension magneto of the Siemens armature type.

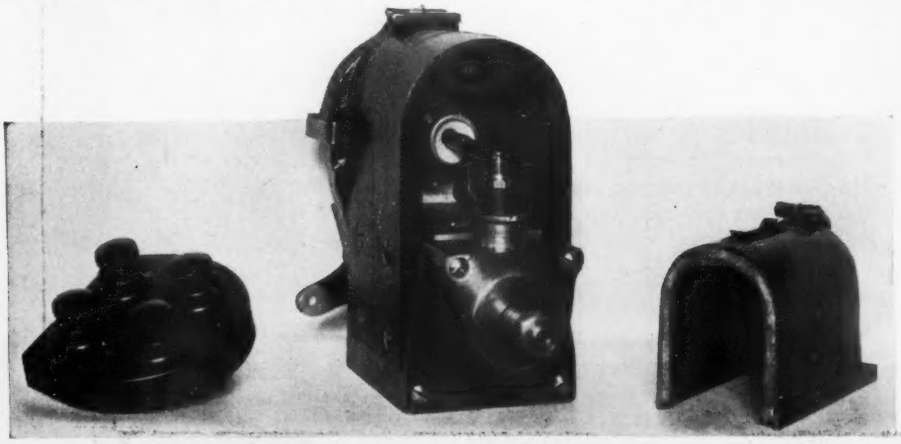
A waterproof cover is incorporated which can be easily removed to afford access to the internal parts of the magneto. The magnets or end plates can be removed without disturbing the waterproofing effect. Two arms furnished with the breaker housing permit the magneto to be linked up from either side.

The cross-section-fibre breaker-arm bearing works on a pin that is integral with the main bearing block. This feature is said to prevent contraction or expansion due to changing temperatures or moisture. The danger of warpage and the consequent disalignment of parts is eliminated by making the base and end plates and all castings of bronze.

Synchronized contact is said to be ensured by the construction of the cam, which is a cross-section of steel tubing, shaped, hardened and ground to size. All high-tension parts are hard rubber.

A small window in the waterproofing cover makes the spark at the safety gap visible. Wear in the distributor gear is adjusted through an eccentric bushing that also provides quiet running at all times.

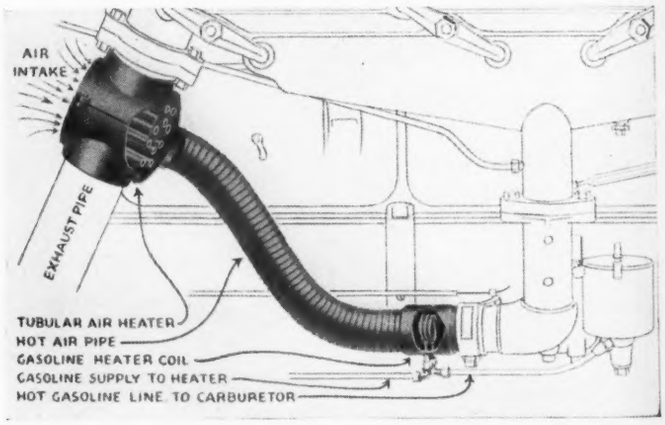
The Lauraine magneto is also made in aluminum for aircraft service.



Lauraine Magneto With the Cover and End Plate Removed, Exposing the Internal Mechanism

Car-bur-aid. A New Attachment for the Carburetor

The Ellis Car-bur-aid device, a recently designed attachment for the carburetor, is claimed to provide a uniform mixture to the explosion chambers at all temperatures and altitudes. The principle of operation depends upon heating the air and fuel before they enter the carburetor to the proper temperature for effective combustion. This is accomplished by utilizing the heat from the exhaust gas.



A View of the Ellis Car-bur-aid, Illustrating the Application and Operation

The air enters a flexible hot-air pipe through a number of small copper tubes running through an air-heating chamber inserted in the exhaust pipe. After the air has been heated in these tubes it passes on through the flexible pipe to the intake. Inserted in the hot-air pipe is a coil of tubing through which the gasoline passes and where it is heated by the air before entering the carburetor.

The suction of the engine controls the speed of the air through the intake tubes and thus acts to produce a uniformly heated air at all speeds, temperatures and altitudes. It is said that carburetor adjustment is unnecessary with this attachment and claims for more power, smoother running and a better combustion mixture, resulting in less carbon, are advanced by the manufacturer, the Motor Efficiency Corp., Real Estate Trust Bldg., Philadelphia, Pa.

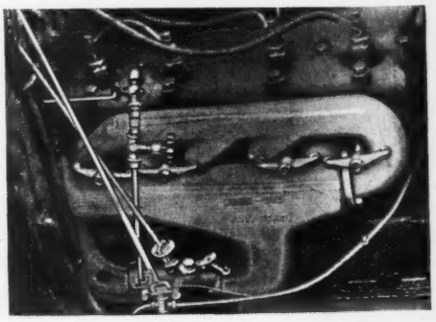
The Ellis Car-bur-aid is suitable for use on any car, and the price, including attachment, ranges from $15 to $37.50, depending on the type of car.

Burn-Oil Device for Fords

An attachment for running the Ford car on kerosene is being offered by the Burn Oil Device Co., Inc., 129 N. Jefferson Ave., Peoria, Ill. It is attached to and operates with the carburetor now on the Ford. More power, smoother running and more mileage from the use of kerosene with the Burn Oil attachment are claimed by the manufacturer.

The device includes an extra fuel tank, a water shut-off cock rod, a needle adjusting valve for water, a control rod for the three-way valve and extra tubing from the gasoline tank to the carburetor.

The simple construction of the attachment prevents a disordered mechanism and



Burn-Oil Attached to the Ford Engine

the entire assembly is said to retain its usefulness indefinitely. The price complete is $30.

GENERAL TIRE & RUBBER CO. has appointed the Adair-Lee Tire Co. as distributor of the General tire in Omaha and vicinity. The General tire line now includes cord tires and a special Ford oversize known as the General Jumbo.

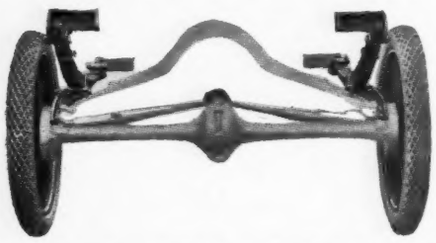
Samson Load-Carrying Unit

The Samson complete unit is designed to enable the Ford car to be used as a serviceable truck or delivery wagon. It is made by the Selden Mfg. Co., 23-29 Selden Ave., Detroit, Mich.

In assembling the unit, extra brackets are bolted to the Ford spring hanger and the brake housing. These brackets support extra springs that assist in sustaining the added weight. The springs are bolted to the truck or delivery body by heavy hangers. The purpose of the attachment is to distribute the weight directly over the wheels and to prevent swaying and bumping of the truck body when traveling over uneven roads.

The unit includes special heavy duty wheels that are designed to lessen the strain on the axle, due to heavier loads, by shifting it to the axle housing. This is accomplished by bolting a self-lubricating ball bearing to the wheel inside the brake drum. The inner race of this bearing takes the end of the axle housing that extends into the brake drum so as to again transfer the load from the axle housing direct to the wheels. The result is said to be practically a full-floating axle.

The wheels supplied are of sturdy construction, 30 x 3½ in., with demountable



Ford Rear Axle With Samson Unit Attached

rims and are supplied complete with brace wrench, standard 31 x 4-in. tires of non-skid design and tubes.

The price of the unit, including the brackets, springs, hangers, bearings, wheels and tires is $115. The unit is shipped complete, ready to assemble, with all necessary nuts and bolts. Extra heavy-duty square-spoked truck wheels are supplied for $10 additional. The various parts of the complete unit are supplied at proportionate prices.

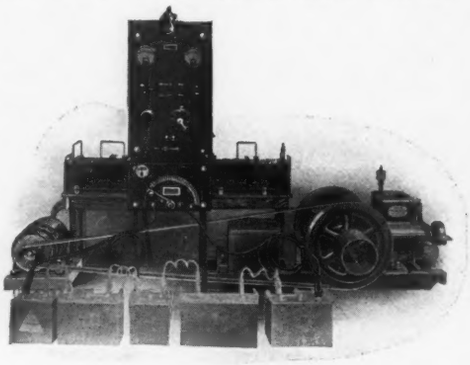
Main Combined Lighting and Battery-Charging Outfit

Garages having their own source of power and desiring to generate current for lighting as well as charging storage batteries, are offered the Main electric equipment at $210 or $270, depending upon the capacity desired.

In the No. 4 set the current is generated in a 40-volt, 20-amp., 800-watt, direct-current dynamo having oil-ring bearings, a sliding base for taking up belt slack, and a flywheel pulley. The slate switchboard is 16 x 30 in. and has a double-reading ammeter of the D'Arsonval type, a double pole, a single-throw switch, cartridge fuses, and a rheostat for regulating the charge rate.

This set will light forty 16-c.p. lamps when no batteries are being charged. When twenty 16-c.p. lamps are being supplied with current there are 10 amp. remaining for battery charging. In other words, the more lights in use the less current remains for battery charging.

Set No. 5 has a greater capacity than set No. 4. It will light seventy-five 16-c.p.



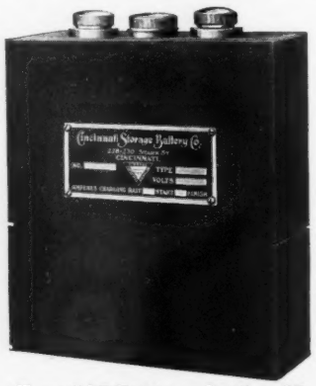
A Complete Lighting and Battery-Charging Equipment for Garages

lamps if charging no batteries. Twenty-five 16-c.p. lamps can be lighted and 25 amp. will remain for battery charging. The Main Electric Mfg. Co., 500 Aiken Ave. & P. R. R., Pittsburgh, Pa., is the producer.

Cincinnati Battery for Lighting

Automobiles not equipped with electric side and tail lights can be so equipped with the aid of a new, specially designed battery of the Cincinnati Storage Battery Co., Cincinnati, O. This type 2A7 lighting battery is small and effective and sells for $7. One month's service is said to be given on one charge.

This battery is 8¼ in. high, 6⅞ in. wide and 2½ in. deep. It is easily placed in a small space without interfering with any



Type 2A7 Battery, Costing $7

part of the car. The battery is especially adapted for use on a Ford car, where it can be placed under the seat next to the gasoline tank. A hardwood, dove-tail cornered case encloses and protects it.

La Crosse Tractor Co., La Crosse, Wis., recently voted to purchase and install additional machinery to the value of $75,000 in order to increase present facilities for manufacturing motors and tractors. The output of La Crosse Happy Farmer tractors, of the Model B type, kerosene-burning 12-24 hp. machines, is to be largely increased.

Radiators for Ford Cars

Special honeycomb type radiators for Ford cars are being offered by the Illinois Gear and Radiator Works, 412-21 Fort Dearborn Bldg., Chicago, Ill.

They are neat in appearance and are built for long service. A guarantee against

One of the Ford Radiators of the Illinois Gear & Radiator Works

leaking from any cause other than from a collision and against bursting through freezing, is advanced by the maker.

For 1916 and earlier model Fords the price is $25. For 1917 Fords the price is $30.

A line of gears of special ratio for Fords is also being produced by this company. The gears are nickel steel, hardened and sand blasted. Ratios of 2¼:1, 3:1 and 4:1 are made. All ratios cost $12.50 per set.

Ever-Ready Ford Attachment

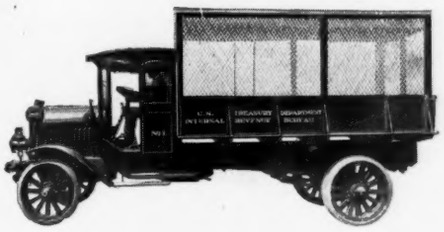
A utility attachment that quickly converts the Ford roadster into a serviceable load carrier is being manufactured by the Ever-Ready Truck Co., 343 S. Dearborn St., Suite 414, Chicago, Ill.

The width of the attachment is 27 in. and the length is adjustable from 27 in. to 5 ft. It has a tailgate and is finished in black to match the body of the car. Heavy iron is used in the construction. The shipping weight is about 150 lb.

In attaching no bolts or screws are needed and there is said to be no rattle after it is properly applied. When not in use the carrier is pushed in under the seat of

The Ever-Ready Attachment in Service

the car and the rear of the roadster body placed over it in its original position. In this way conversion is accomplished quickly and without tools. The appearance of the Ford roadster is not altered. The capacity of this attachment is 1000 lb. The price, complete, is $65.



1½-2-Ton Capacity, $2750
3½-4-Ton Capacity, $3600

VELIE Trucks have ample power for every road and load condition, dependability, low upkeep and operation cost, and freedom from need of repairs.

These proven attributes make them winners on the fields of business and war alike, and puts them in the front ranks of every fighting squadron. They are helping build cantonments; hauling men, munitions, supplies and materials for the government "Somewhere in America," as well as "Somewhere in France." They are helping build big business for every commercial user. Veterans of many a campaign.

You will find built-in values in every detail—built up to these specifications—Heavy-Duty Continental Motor, Worm Gear Drive, Timken Bearings throughout, steel Raybestos Disc Clutch, nickel chrome and vanadium steel construction. Satisfaction and service assured.

Write today for booklets and complete particulars.

Velie Motors Corporation
119 Velie Place **Moline, Illinois**

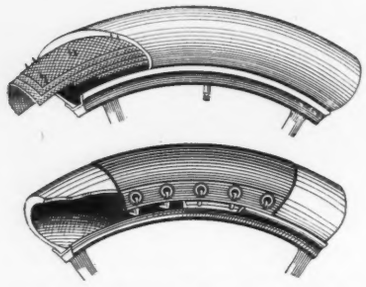
Builders of Automobiles, Motor Trucks and Tractors

Velie Trucks WORM GEAR DRIVE

Blow-Out Boots for Tires

Two blow-out boots, one for the inside and the other for the outside of the tire, are being offered by the Peerless Tire Protector Co., Inc., 713-15 E. Pike Street, Seattle, Wash.

The outside boot is applied by placing it over the blow-out while the tire is deflated, and as it is inflated, the heels of the sharp steel points are backed against the sides of



The Inside Blow-Out Boot, Above, and the Outside Boot, Below, as Applied

the iron rim and forced into the head of the tire. Thus engaged, the boot is said to hold any blow-out until the boot is worn out.

The inner boot has staples in it that settle into the tire as it is inflated. These staples prevent the boot from being forced into the blow-out hole. The boot prevents the tire from spreading and makes it serviceable for many miles after the blow-out occurs.

Doman HT Tractor Engine

The HT model Doman engine is designed solely for use on tractors. It is built for strength, endurance and reliability under severe working conditions. It develops its maximum power at 800 to 900 r.p.m.

A three-point-bearing, drop-forged crank of 35-40 point carbon-steel, 7¾ in. diam., double heat-treated and annealed, is used in this engine. The bearings are die cast of special high-duty babbitt, bronze bracked, removable and interchangeable. The total main bearing length of the three bearings is 12½ in.

The Doman 4¾x6-in. engine has T-head cylinders, cast in pairs, of close-grained semi-steel ground to size and hydraulically tested. T-head engines are said to allow the use of extra large water jackets, thus providing better cooling of the valves.

The valves operate mechanically in a vertical position with the valve cages easily accessible. There is little wear on the valve stems and the cams and push rods operating the valves are specially hardened. The valves are 3½ per cent. nickel-steel, electrically welded to carbon-steel stems. Their diameter is 2⅜ in.

Lubrication is through a splash system of oiling and cooling is obtained through a centrifugal water pump. A high-tension tractor magneto with an impulse starter provides ignition. No batteries are used. A horizontal fly-ball type governor, enclosed in a dust-proof case, controls the amount of mixture entering the intake manifold.

The semi-steel crankcase is in two sections, the crankshaft being carried in the upper part and the lower part containing the oil troughs and reservoir. Four hand plates in the upper crankcase and a removable gear cover add to the accessibility of the working parts.

This 4-cycle tractor engine develops from 25 to 35 hp. and is used on three- to four-plow tractors. Two coats of iron filler and enamel give an attractive finsh. The H. C. Doman Co., Oshkosh, Wis., is the manufacturer.

W-A Ford Delivery Body

A serviceable delivery body of 500-lb. capacity, for use on a Ford roadster, is being marketed by Armstrong-Whetstone Co., Lapeer, Mich. It is sold for the nominal price of $15.

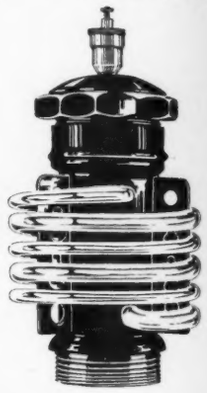
This body is attached with four extra long bolts that replace the ones fastening the back of the roadster to the platform. In this way no holes need be drilled. A glossy black varnish finish gives the body an attractive appearance.

The body is 52 in. long and 34 in. wide, with 10-in. sides and 6-in. flareboards. The drop end-gate has ironed edges and full length hinges. There are four inside and two outside braces, and three cross-sills that insure strength and durability.

Burke Condenser Evolved

Since alcohol is more volatile than water, when used to provide an anti-freeze mixture in the radiator, the heat vaporizes it first. In time, therefore, the proportion of alcohol to water will become too low to prevent the water from freezing.

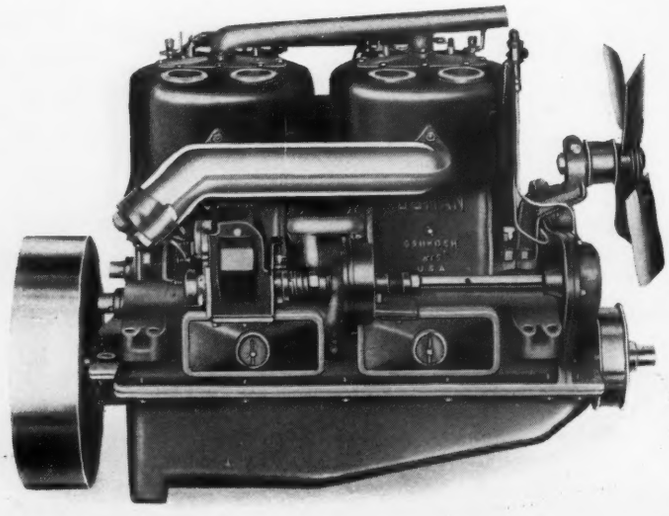
To overcome this condition the Burke condenser was devised. It consists of an outer shell that receives the vapor and a pipe that is wound around the outside of the shell, connecting at both ends with the shell chamber. In this the alcohol vapor is condensed and returned to the radiator. This arrangement keeps the radiator mixture at a practically constant proportion.



Standard Burke Condenser, a Device to Condense Alcohol Used to Prevent Freezing of the Water in the Radiator.

In attaching the overflow pipe is closed and the device is screwed into the radiator neck in place of the cap. The closing of the overflow pipe prevents the loss of fluid through evaporation. Two models are made, the Standard and the Little Giant, which sell for $10 and $5, respectively. The manufacturer is the Automobile Devices Co., 1619-21 Sansom St., Philadelphia, Pa.

W-A Body on a Ford Roadster



Magneto Side of New Model HT Doman Tractor Engine

Trucktor—a Three-Wheel Commercial Unit

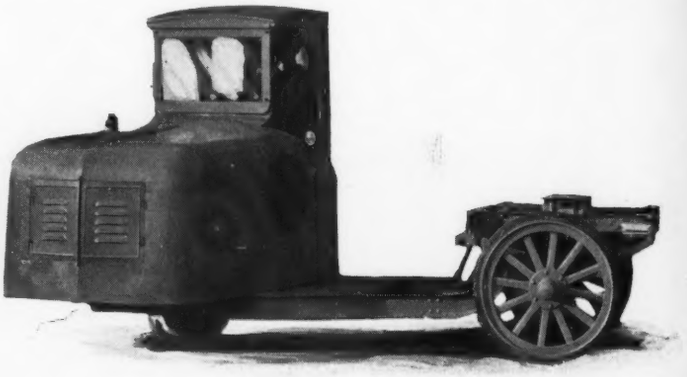
THE Highway Tractor Co., of Indianapolis, Ind., is offering a new 3- to 5-ton commercial tractor. This machine has been appropriately named the Trucktor. While its construction departs somewhat from the conventional type, it embodies the principle of pulling a load rather than carrying it.

The company is composed of men of experience in the motor vehicle industry, and their aim has been to place upon the market a hauling tractor that would be economic as well as effective in operation. The Trucktor is a 3-wheel machine capable of turning alone, or with its trailer, in a very small circle. It drives and steers from the front wheel, the power plant and driver's cab, with its controls, being so mounted that the machine can be reversed, facing the trailer and pushing it, should it be necessary to back for any great distance. It can also back in the usual way. The turning mechanism and fifth-wheel arrangement on the Trucktor make for very easy handling in traffic or in close or congested places around depots or warehouses.

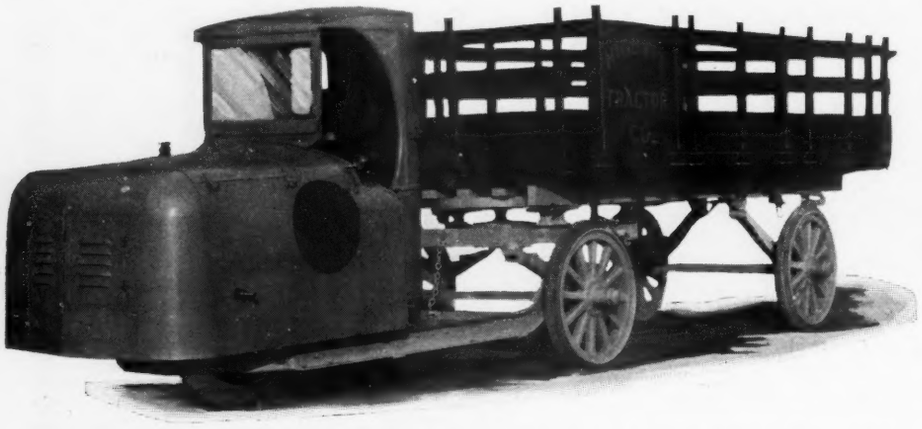
The motor is a 3¾x5-in., 4-cylinder Continental. It is cooled by a cellular radiator, and water circulation is by a pump. Ignition is through a high tension magneto. The main driving wheel is mounted on a 34x8-in. solid rubber tire, while the rear wheels are 36 x 4 in., also solid rubber. The transmission is a two-speed gearset of special design, having large face gears. A 10-in. Borg & Beck clutch is used. The drive from the countershaft is through a roller-type chain, while the final drive is an internal gear inclosed from dust.

The semi-trailer is attached to the Trucktor by a ball-and-socket type fifth-wheel, and is so arranged that it can be readily connected or disconnected in a few moments. This fifth wheel arrangement is such that it can be readily adapted to any conventional type of horse-drawn vehicle or semi-trailer. For heavy loads a rubber-tired semi-trailer is advised.

The price of the Trucktor complete, including all attachments for connecting the semi-trailer, is $1750, f.o.b. Indianapolis.



Front Wheel, Power Plant and Driver's Cab Move as Unit in Short-Turning Radius.

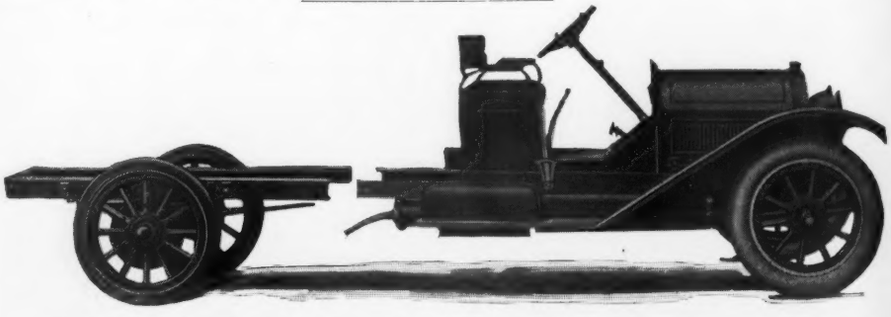


Trucktor Commercial Unit Drawing A Semi-Trailer Through Fifth-Wheel Connection

F. R. BLAIR Co., INC., 50 Church St., New York City, has been appointed sole distributor of the Fabritex specialties manufactured by the Charles Bond Co., Philadelphia, Pa. This line consists of fan belts, snubbers, strap and frame insulating material.

HURLBURT MOTOR TRUCK Co., New York, N. Y., has built an addition to its plant and is now occupying a manufacturing area of 95,000 sq. ft. The Hurlburt company is now manufacturing its own rear axles.

PUGH BROS. Co., Providence, R. I., distributor of Atterbury trucks, is occupying its new building on Cedar St. This service station, which covers 40,000 sq. ft., will be devoted entirely to the service of Atterbury trucks.



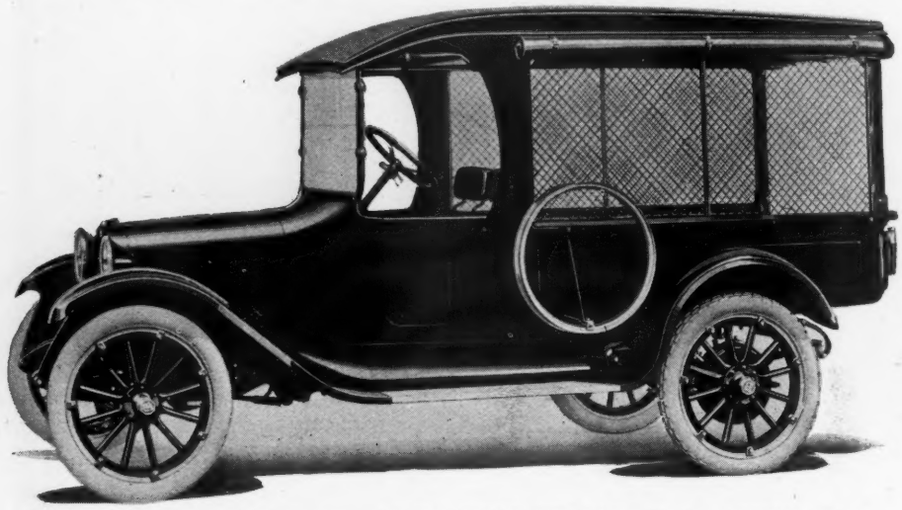
Elton Truck Attachment for Converting the Cadillac Car Into a Commercial Car

The Tau Iron Works Company, of Youngstown, Ohio, is manufacturing these attachments for making over 1911-12-13-14 Cadillac cars into trucks. Torbensen internal-gear rear axles are used with heavily built side-frame members and specially designed rear cross members. The wheelbase of the car when converted is 138 inches. This unit is really applicable to any make of car, but is offered especially to Cadillac dealers.

Dodge Commercial Car Ready

DODGE BROTHERS, of Detroit, Mich., has announced a light commercial car with much the same specifications as its pleasure car. This model will have a capacity of from 1000 to 1500 lb. It is now being placed in the hands of the dealers.

Brief specifications of chassis of this model are as follows: The engine is a four-cylinder, 3⅞ x 4½-in., rated at 24 h.p. The ignition is by the Delco system, and the carburetor used is the Stewart. Clutch, transmission and engine are mounted in unit; the clutch is of the disc type and the transmission has three speeds forward. The wheelbase is 114 in. The springs in this Dodge commercial car are heavier and stronger than those of the passenger car and the tires are larger, being 33 x 4 in. all around, plain tread front and non-skid rear. The steering knuckles and various other parts have been strengthened, as necessary. The frame has been lengthened to secure a loading space 72 x 43 in. Gear ratio is 4:1. The steering post is set at a higher angle than that of the passenger car and the gasoline tank is placed beneath the driver's seat.



The New Dodge Light Commercial Car, Which Will Carry Up to a 1500 lb. Load

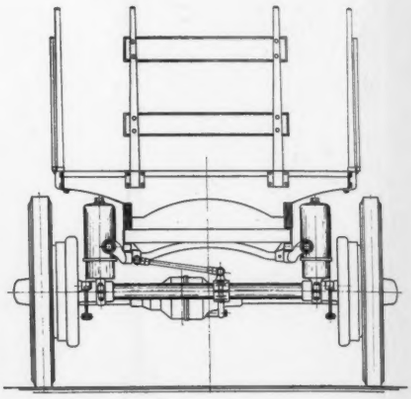
The body is of pressed steel, black enamel finish, and complete enclosure of the car is accomplished by substantial curtains for both sides and rear of the driver's seat as well as for the sides and rear of the body. The driver's seat is upholstered in leather. Side screens furnished with the body are removable.

Air-O-Flex Truck Suspension

The Air-O-Flex Automobile Corp., Detroit, Mich., has evolved a new device for suspending car bodies, known as the Air-O-Flex suspension cylinder. The engineers claim to have found the long-sought ideal suspension giving a wide flexibility, and being quickly adjustable to both load and road conditions from the dash. Trucks fitted with the Air-O-Flex suspension cylinders are said to travel with equal resiliency whether empty or loaded. The suspension cylinders replace the springs, enabling the suspension of the truck load to be regulated according to the weight carried.

Instead of steel springs, four cylinders are used, one for each wheel, attached to the vehicle so that part of the cylinder moves with the chassis and part with the axle, the chassis and load riding on a resilient cushion or contracting and expanding body of air and oil, the cylinder being governed in the rapidity of its telescopic action by pressure and vacuum working in unison. The action of each cylinder is independent and is against a pressure in a central tank, 30 in. long, 6 in. diam., which is one-third filled with ordinary engine oil. Pressure is maintained in the tank with an ordinary air pump attached to the motor, and, by means of a regulating valve, this pressure automatically increases or decreases to gain the desired flexibility. The cylinders are attached to the axle by a ball-and-socket joint and to the chassis or frame by a bracket connected by means of trunnion studs. A full universal action is said to be provided to allow freedom of motion in all directions, thus relieving the cylinders of side strain and consequent wear.

Component Parts of the Air-O-Flex Suspension



Air-O-Flex Attached to Rear of Truck

The driving strains are taken through a pair of radius rods that secure the front axle in its position. The cross or side strains are taken by a rear cross-radius rod. These radius rods absorb fore and aft strains as well as side strains, but carry none of the load. The cylinders perform the sole duty of flexibility supporting the load and are free from all other strains.

Rubber Cement and Rubber Putty—New S-V Products

The Williams Mfg. Co., Camden, N. J., is marketing S-V rubber putty, S-V rubber cement, and S-V self vulcanizing tire repair outfits. The putty is a rubber substance of the same consistency as putty, made for the purpose of filling in cuts and holes in the casing, thereby protecting the tire fabric. It is also used for repairing punctured inner tubes and casings when used with S-V cement.

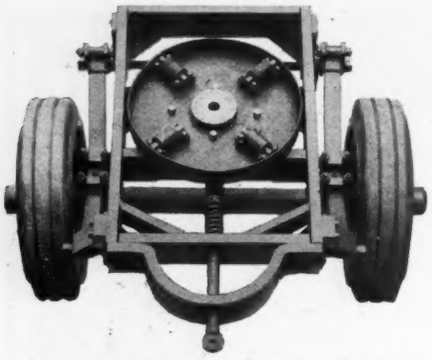
S-V cement can be used successfully, it is said, for splicing and repairing inner tubes without the aid of acid and also for vulcanizing tubes and casings on steam and electric vulcanizers.

A 1-pint tube of S-V rubber cement sells for 40 cents and a 4-oz. can of the rubber putty cost 65 cents. Complete tire-repair-outfit kits can be obtained for $.50 and $1.

UNITED MOTORS SERVICE, INC., New York, N. Y., announces that its factory branch in Chicago will occupy a new three-story building, construction of which will be begun immediately. The new structure will have an area of 15,000 sq. ft. and will be equipped with complete stocks of factory-made parts for Delco or Remy starting, lighting and ignition systems and Klaxon horns. The building will be completed and ready for occupancy about March 1, 1918.

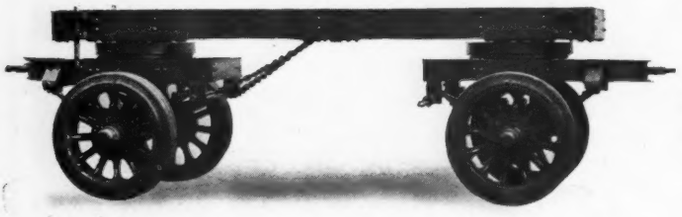
Pioneer Heavy-Duty Trailer

A complete line of trailers and semi-trailers, in capacities up to 15 tons, is being produced by the Pioneer Trailer Corp., 233-35 Sixteenth St., Detroit, Mich. The use of a two-wheel "front truck" converts a Pioneer semi-trailer into a four-wheel trailer. This feature allows a wider range of service.



Top View of a Trailer Unit, Showing the Unique Design of the Pioneer Turntable

A special turntable with roller bearings running in oil is used. This table replaces the regular fifth wheel and is a special design and make of the Pioneer Trailer Corp. The use of straight dead axles with no joints or knuckles is possible and strong parts and true running are said to be obtained. A double-acting spring drawbar takes up the starting and sudden-stopping shocks.



The Pioneer Units Combined to Form a Four-Wheel Trailer

For the 4-ton semi-trailer and 4-wheel trailer, the specifications include 36x4-in. front and 36x6-in. rear, solid Firestone tires and Smith cast-steel wheels. The axles are chrome-vanadium, heat treated, and 2½ in. diam. Heavy-duty Hyatt roller bearings are used throughout. The springs are manganese steel, 3 in. wide and 48 in. long. All castings are electric-furnace vanadium steel. The frame is 4-in. channel steel.

The heavier-duty trailers are similar in construction to the 4-ton type, but have larger and heavier frames, wheels, tires, springs, axles, etc.

Prices will be quoted for immediate acceptance upon request.

ROTHWEILER & Co., Seattle, Wash., manufacturer of coupling bolts, cap screws, studs, etc., announces that it is moving into the factory recently erected. The new building is modern in every respect, provided with ample lighting facilities, is steam-heated throughout, and equipped with large lavatories and rest rooms.

Ten Stars in Motor Truck Club Service Flag

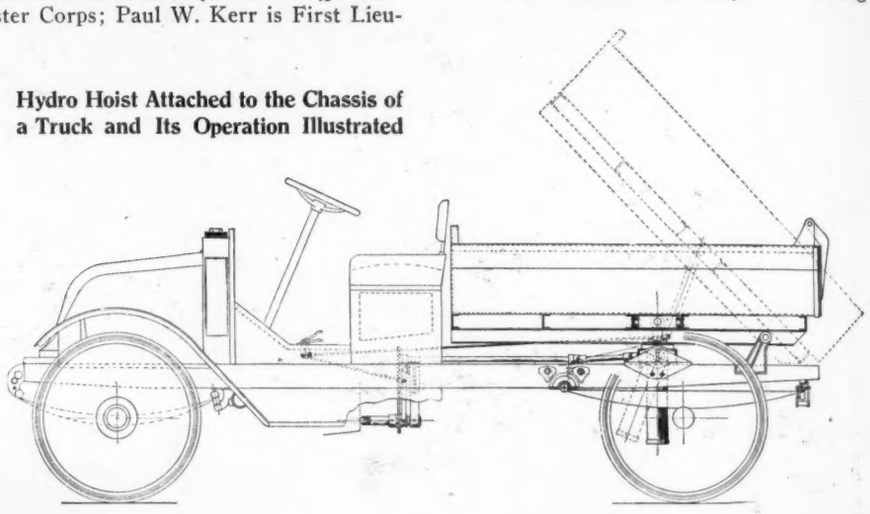
The Motor Truck Club of America numbers in its membership ten men who are in the service of their country. Of these, two are Majors and five are Captains. S. P. Wetherill, Jr., is a Major in the Quartermaster Corps and is in charge of the Transportation Equipment Bureau at Washington. Captain Roderick Stephens, president of the Motor Truck Club, is his assistant. H. A. Green is a Captain in the English army; T. T. Seggerman is a Captain in the 315th Regiment, Field Artillery; Arthur J. Slade and George Stevens are Captains in the Aviation Department, Signal Corps; E. K. Coulter is a Major in the Quartermaster Corps; Paul W. Kerr is First Lieutenant in the Ordnance Department; W. R. Betts is in the 107th Regiment of Infantry, and Wesley M. Oler, Jr., is a cadet in the Aviation Department, Signal Corps.

Hydro Hoist Conserves Space

Hydro Hoist is the name given an appliance made by the Hydro Hoist Co., 3212-16 Vliet St., Milwaukee, Wis., that is adjustable to any truck chassis.

The Hydro Hoist is claimed to give a positive direct lift, without the use of cables, pulleys, etc. The mechanism is in one compact unit and is guaranteed for the life of the truck. The ability to use the entire chassis for body or loading space distributes the load more evenly on the front and rear axle. The Hydro Hoist gives the truck a neat appearance and enables it to be driven under low bins. It is made in three different sizes, No. 4 for 2 to 3½ tons; No. 5 for 3½ to 5 tons, and No. 6 for 6 to 10 tons capacity. Prices will be quoted on request.

Hydro Hoist Attached to the Chassis of a Truck and Its Operation Illustrated



New Plant of Duplex Truck Company, at Lansing, Mich., Now in Course of Construction

The new factory of the Duplex Truck Company, of Lansing, is rapidly nearing completion and production of four-wheel drive trucks in the new buildings is expected to be started shortly, when the output will be increased to three hundred trucks monthly.

Rush for Pennsylvania Licenses

The business of issuing licenses has so increased in the last few years that the automobile division of the State Highway Department cannot wait until a few days before the new year to begin issuing them. Automobile license fees for 1917 are now a million dollars in excess of those for 1916 and approximately $2,000,000 over those for either 1914 or 1915. The number of licenses issued to the first of November totaled 542,528 and the receipts for registrations and licenses amounted to $3,246,144.50.

Applications for 1918 licenses so far total 5200 and $40,835 has been paid into the State Treasury by persons who want their tags on time.

The following table shows the rapid growth of the automobile business in Pennsylvania:

Year	Licenses	Amount
1914	164,536	$1,178,951.50
1915	232,697	1,654,258.00
1916	329,300	2,303,625.50
1917	542,528	3,246,144.50

The classes of motor vehicles for which the more than half a million licenses were issued during the first eleven months of 1917 were as follows:

Pneumatic-tired motor vehicles...	303,417
Solid-tired motor vehicles	18,506
Tractors	2,789
Trailers	830
Motorcycles	24,489
Paid drivers	65,341
Tractor drivers	252
Dealers	7,875
Tractor Dealers	69
Operators	110,440
Tractor operators	72
Duplicate (pneumatic-tired)	5,338
Duplicate (solid-tired)	989
Duplicate (motorcycles)	518
Duplicate (dealer)	9,944
Duplicate (paid driver)	296
Duplicate (trailer)	9
Ex. trf. (pneumatic-tired)	113
Ex. trf. (solid-tired)	2,211
Totals	542,528
Total Pneumatic-tired	20,885
Solid-tired	543
Transfers (motorcycles)	364

Of this number 112,224 were free registrations and licenses.

Rowe Motor Mfg. Co., Downingtown, Pa., manufacturer of worm drive trucks, has purchased a large tract of land along the Pennsylvania railroad at Lancaster and is erecting a modern factory building. It is expected that this new plant will be in operation by January 15th. With this new addition the company expects to exceed its present output by 200 per cent.

Ohio Trailer Co., Cleveland, O., has removed to its new plant on Oakview Rd., Nottingham, Cleveland. Three acres of ground have been secured and the first building, now ready for occupancy, will be devoted almost exclusively to the production of a large order on hand from the United States Government. It is estimated that from four to five months will be occupied in this work.

Pierce Governors Now Driven by Solid Steel Shafts

The Pierce Governor Co., Anderson, Ind., has just announced that as rapidly as it is possible to complete new patterns and test our governor installations, it is eliminating the old style flexible shaft and tube for driving the governors, and is substituting a solid cold-rolled steel shaft, which revolves in a solid steel housing.

For several months the Pierce Co. has had in mind this change, but in nearly every case it has been necessary to secure the co-operation of the engine manufacturers and get them to make a few slight changes in the engine construction. This has taken time, and the governor manufacturers have withheld announcement of the impending change until they were at least able to promise something definite regarding deliveries.

In a very large measure the flexible shafts proved satisfactory, as evidenced from the fact that out of the 100,000 governors which are in service, shaft troubles reported average less than ten per week—and some of the governors are now five years old. Troubles reported were in nearly every instance the result of torturous bends or lack of lubrication.

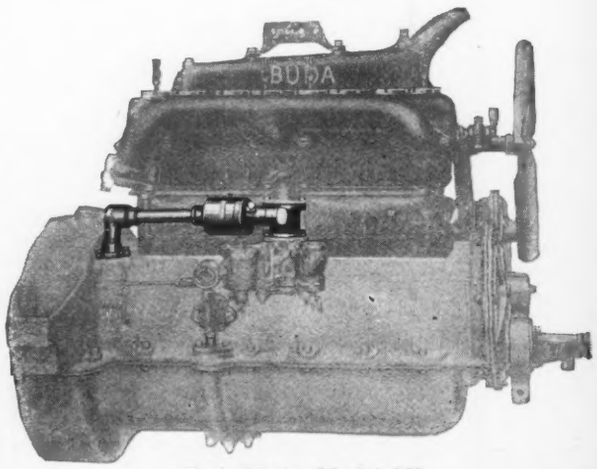
However, it cannot be denied that there is always more or less back-lash where flexible shafts are used, which is detrimental to perfect governor operation. The result is especially noticeable when the engine suddenly changes speed, because the flexibility of the shaft makes the governor a trifle sluggish in operation.

With the new type drive the spider shaft inside the governor is slotted so that the key on the end of the drive shaft cannot possibly become disengaged. The tube enclosing the drive shaft screws into the end of the governor case and is securely fastened by means of a lock nut. Where it is necessary to bend the shaft a special right angle connection is used, containing hardened bevel gears. By varying the size of the gears in this right angle drive, it is possible to operate the governor at 800-1000 r.p.m. (at which speed it contains its highest efficiency) regardless of what engine speed is desired.

The connection for attaching the governor drive shaft to some rotating part of the engine is seldom the same on any two engines. On Continental engines the governor shaft is attached to a special spiral-gear-drive, furnished by the engine manufacturers, which attaches to the camshaft gear cover and is driven from the end of camshaft. Wisconsin engines are provided with a governor connection on top of the crankcase, which is also driven from the camshaft. On Buda engines the governor drive is also taken from the top of the crankcase, but from a connection with the pump shaft.

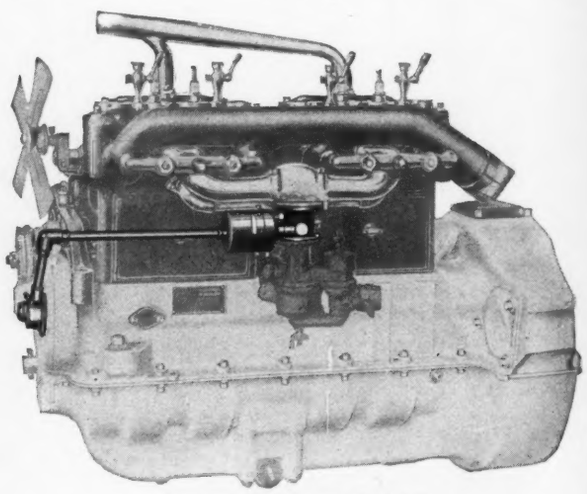
On a large per cent. of the engines, such as Hercules, Red Wing, Teetor-Hartley, North American, etc., the governors are operated by means of bevel gears in a special housing attached to the front gear cover and driven from the camshaft.

In operation the solid shaft requires considerably less attention than the flexible shaft, as the shaft itself needs no lubrication. The only attention necessary is to inject heavy oil (through oil holes provided) into the governor drive and right angle drive, to lubricate gears and shaft bearings. This is a very simple matter and is not necessary oftener than once every two thousand miles.



Buda Motor, Model QU

Showing solid governor shaft for driving Pierce Governor. Shaft is connected with oil pump by means of a special adapter.



Continental Motor Model E

Illustrating installation of Pierce Governor, with solid shaft connected to spiral gears driven from front end of camshaft

Many drives for the different engines are now ready and plans are under way for equipping other makes. This will be done as rapidly as possible.

Road Oilers of All-Around Utility

By GEORGE BROWN

AN investment, made last Spring, by the Chicago Department of Public Works for service in the Bureau of Streets, of four Worley-Logan high-pressure, atomizing road oilers, tar and asphalt spreaders, power flushers and sprinklers; two of 1000 gal. oil capacity, at a cost of $6,500 each, and two of 1200 gal. capacity, costing $7,000 each, has proven, from actual service tests, both profitable and satisfactory as a street dust destroyer.

The Worley-Logan atomizing road oiler is manufactured to economically spread or spray the oil, with the possible elimination of all waste. This is accomplished by perfecting atomization and applying the oil to the street surface under high controlled pressure. The operator is enabled to regulate the flow or rather spray, discharged from the machine, from one pint to one and one-half gal. of oil per sq. yd., as may be necessary.

Rear View of the Road Oiler, Showing the Levers Controlling the Various Outlets

The specially efficient feature of this truck is that oil, tar or even water may be distributed by it, at various times.

At one drive, a surface of 3, 6, 9, or 12 ft. in width can be covered. The distribution is equal and the necessary pressure insures penetration; in fact, from actual results on all streets where the road oiler has been operating on macadam surfaces, penetration followed so speedily that traffic interruption is only for approximately one hour after the oil application. The district foremen of streets, previous to operating the machines, provided heaps of sand and gravel at all street intersections, and, with a crew of employees at each crossing, scatter this dry material, following the oiling process as fast as the machine finishes, thus saving the annoyance of pedestrians carrying oil on their footwear into their homes or elsewhere. The sidewalks are noticeably free from oil-tracks.

The manufacturer's claim—that the machine will oil one-half mile of road, twelve feet wide, giving each sq. in. of surface the same amount of oil, in a period of five minutes—is an accomplished performance on Chicago's dirt and macadamized street surfaces. The machine's rapid work with the total dust elimination in its wake sustains in full all of the manufacturer's claims.

The advantages and economies of the machine are many, such as aside from the uniform distribution and regulation of the quantity of oil necessary, the protection to the curbing, sidewalk, grass plots and lawns, for, as the oil is discharged in a spray of mist from the atomizer which is enclosed by steel and canvas curtains, it goes without waste to the street or road surface, the oil being expelled at a temperature of 250 degrees Fahrenheit, secured by radiation with kerosene fuel.

Mounted on a Kelly-Springfield truck, it is as efficient for the many city streets as for practically all rural roads. The power is ample to haul trailers with material for road building, and, without changing equipment, the machine is efficient as a tar or asphalt spreader.

The system used in heating and holding the temperature of asphalt to a high Fahrenheit is that of steam, thus rendering it impossible to scorch or burn the materials heated therein. Loading the tank is accomplished by means of a vacuum. No pump or engine is employed. The same system obtains in raising the temperature while heating. The manufacturer claims that the elimination of the use of pumps to circulate the oil while heating obviates 90 per cent. of the trouble connected with motor power asphalt spreaders. Kerosene, used as the heating fuel, is circulated through a system of coils, heating and super-heating until vaporized and burned in the form of gas.

The contents of the tank are displaced under air pressure through an ordinary line of gas pipe, with a patented nozzle for spraying same. This simple constructed machine renders it free from complication and easy to clean. All nozzle and asphalt lines are connected with the steam line, so that if it be necessary to stop for noon, night or temporarily, one pull of the steam throttle heats and blows out all of the asphalt lines perfectly before starting work. Another pull at the steam throttle will heat the pipes, which will assist the flow of asphalt when again turned into the line. The steam boilers are simply constructed and equipped with injectors for the replacement of water, displaced in the form of steam. It is equipped with a water emergency tank for this purpose and only ten to twenty gallons of water are used daily in its operation. In starting the machine in the morning, only thirty minutes is required in establishing a head of steam, ready to receive the material. It then operates rapidly and is claimed by far the most efficient machine available from the standpoint of heating, endurance, durability and economy.

The Atomizing Road Oiler, Built by the Good Roads Company, Kansas City, Mo., and Which is Being Used by the Chicago Department of Public Works

It is also stated that as a street flusher this machine is superior to all. The capacity of its tank is 1,480 gallons with a 1,300 gallon water capacity. It will wash from center to curb both sides of a 60-foot street at one drive.

As stated before, the pressure used in displacing its contents is that of air, which

is supplied by means of a compressor, operating independently of the engine that propels the machine. It operates automatically without care or attention, other than the usual care required in starting, filling with oil, etc. The entire contents of the tank are distributed under an even and equal pressure, regardless of the number of flushing nozzles in operation, either one, two, three or four. The machine is also equipped with auxiliary flushers, to be used in turning corners and washing intersecting streets. There are no pumps, paddles, discs or gears coming in contact with the water to be cut or worn by the sand and foreign substances that water contains.

As a first class motor-driven flusher it will do a day's work requiring at least four two-horse teams at an operating expense of 50 per cent. of the horse equipment. It also will only occupy about one-fifth the storage space.

This machine is also used for watering lawns and shrubbery in dry seasons of the year, and without change of equipment can be used as a pressure or gravity machine in the flow of water. It may also be used as a chemical machine for spraying trees and shrubbery in parks and along drives. In emergency cases it is used as a fire fighting tool.

The Worley-Logan atomizing road oiler is manufactured in Kansas City, Mo., by The Good Roads Co., Inc. The officers are: President, Charles E. Logan; secretary and treasurer, John A. Logan; vice-presidents, A. L. Harroun and W. A. Moses.

Miami Model No. 2 Trailer

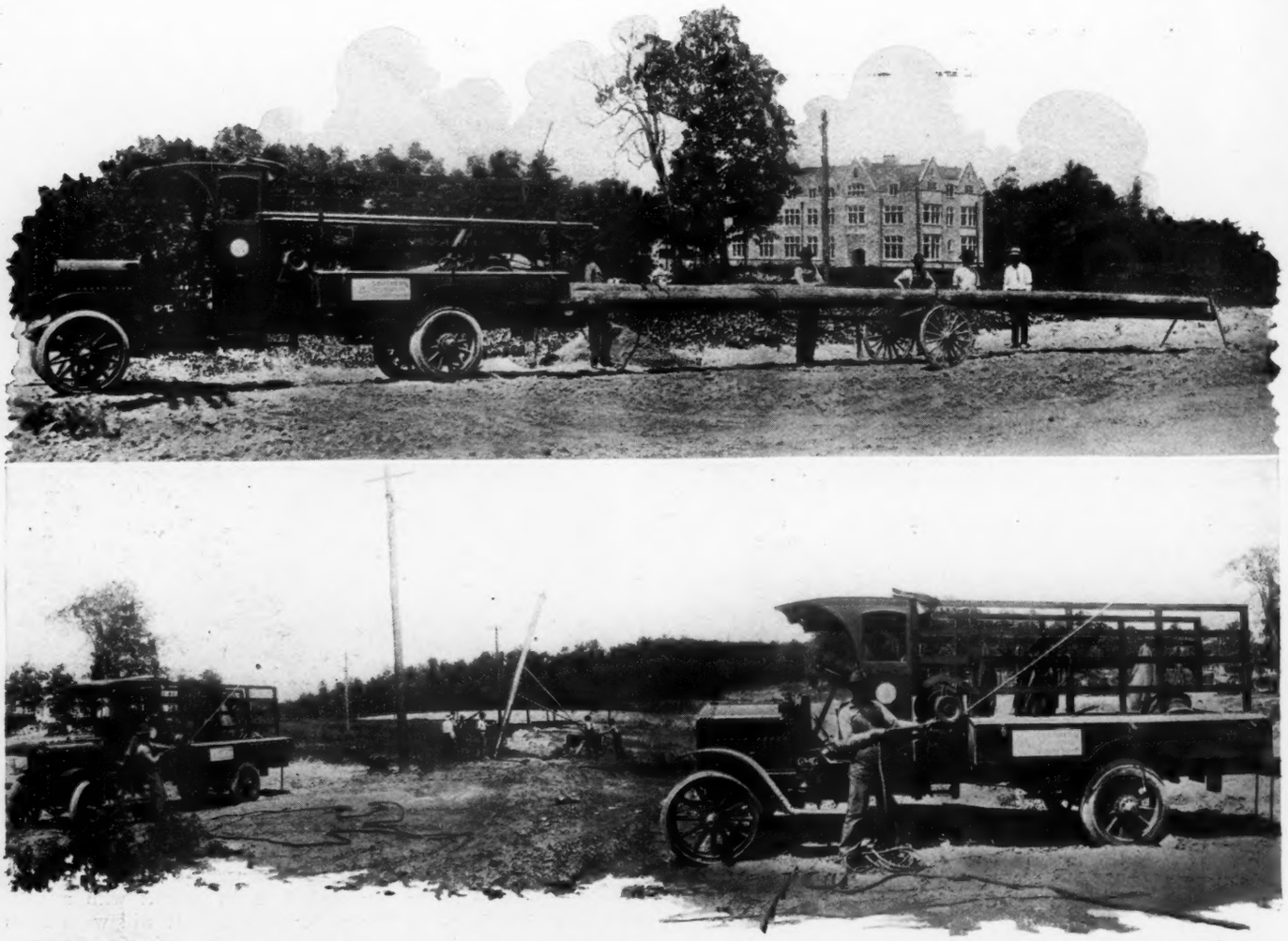
Several types of trailers are being manufactured by the Miami Trailer Co., Troy, Ohio. Both two- and four-wheel trailers are included in this line. The frame specifications of the various four-wheel types are similar, as are also those of the two-wheel type. The bodies, however, are made in sizes and types suitable for various purposes.

Model No. 2, which is illustrated herewith, has a carrying capacity of 1250 lb. and weighs 500 lb. Timken roller bearings and 1¼-in. Timken axles are used. The wheels are of the artillery type, both front and rear being 32 in. diam. with 1¼-in. spokes, rims and tires. A short-turn specially designed steering device is supplied. The springs are oil tempered and semi-elliptic, 1½ x 38 in. The thread is standard 56 in. and the wheelbase is 70 in. From the ground to the bed of the body is 26 in The drawbar is designed to absorb shocks.

The body on Model No. 2 is 96 x 38 in. and has 8-in. flareboards and 10-in. panels. It is oak, braced with steel and is equipped with a drop end gate with chains.

The trailer is attractively finished in black, striped and varnished. An electric tail lamp is also included. Attachment is made to the chassis of the automobile and not to the axle.

Model No. 2 Has a 1250 lb. Capacity



Southern Bell Telephone Co. Motor Truck and Crew Doing Rush Job of Planting Poles for Lines to the Army Cantonment at Camp Gordon

Instead of the much slower, more hazardous, and more expensive raising of poles by hand power, the Southern Bell Telephone Company is using these specially equipped G M C trucks—six of them. A power take-off device can be had on these trucks when ordered, so that the engine can do other work besides driving the truck. In the truck shown it operates a winch on the side. A pulley block is fastened to a pole already up and a cable run through it with one end fastened to the top of the new pole and the other cast a few times around the drum of the winch. Four men with pike poles handle the lower end of the pole and guide it into the hole as the winch pulls the top up into the air. The upper view shows how the poles are transported with the help of a trailer.

Resolution of Ohio Good-Roads Federation

The following letter and resolution have been received from the Ohio Good Roads Federation:

"We believe that a very critical condition exists in the policies that are being adopted by county authorities relative to road improvement. Owing to the inability of the railroads to meet the demands of the Government for transportation service and also the demands of general business that is made upon them, it is very apparent that the public highways will have to bear a greater burden than is now imposed upon them, and that private enterprises, whether it be the store, or the factory, or the mill, or the home, will have to depend upon the vehicles that use the public road to keep going. Few people realize the seriousness of this condition. Over fifty per cent. of railroad facilities are now serving the Federal Government, the other fifty per cent. is trying to serve general business throughout the nation, but it can't do it, so the highways are the only agency we can use to secure the exchange of products and commodities.

"At a recent meeting of the Board of Trustees, the enclosed resolution was adopted. No county should hesitate in going forward with plans for improvement next year. They should, however, collate their plans with those of the state and federal governments. Cities should be connected up along the line of the movement of the heaviest traffic. Townships and counties should be made accessible to county seats. In this way we may be able to meet a very serious problem that is bound to be thrust upon us."—W. A. Alsdorf, Secretary.

Resolution Adopted by the Trustees

Whereas, the conditions created by war have made the federal government the largest user of available transportation facilities in addition to those required by agricultural, industrial and commercial demands; and

Whereas, such available transportation facilities are unable to meet the present combined demand of the government and private enterprise upon them; and

Whereas, for reason of these added burdens our present transportation facilities are sure to be the limiting factor in general business, thereby lessening both the earning power of our citizenship and their industrial efficiency; and

Whereas, the railways of the country admit their inability to cope with the dual demands upon them and the danger attending such decrease of transportation service, which may bring, not only suffering upon the people, but a possible catastrophe to the nation by reason of its helplessness to transport those things needful for use upon the farm, in the mill, the factory, the store and the home; and

Whereas, the public highway is recognized as an instrumentality of incalculable value to the nation for transportation purposes, and is the one great agency to which we must now turn as the means for exchange of the products of the nation's industry;

Therefore, We Resolve, That we view with alarm the policy of stopping the improvement of public highways, as a non-essential enterprise, when it is apparent that the public highway is the single unit of our transportation system upon which alone private enterprise of every character may have to depend for its very existence; and

We Further Resolve, That instead of curtailing the improvement of highways we earnestly urge their development as primary factors of immediate concern for preserving and safeguarding the present prosperity and stability of the nation in its struggle for the preservation of human liberty; and

We Further Resolve, That we commend the National Council of Defense for recognizing the vital relationship of all transportation agencies; their untiring efforts to secure a correlation of usefulness, and a higher degree of efficiency in all transportation problems. To this end we approve of the appointment by it of a committee on highway transportation, believing that a greater degree of development will come out of a more comprehensive knowledge of the whole subject and its interdependence; and

We Further Resolve, That we favor the prompt adoption by the federal government of a general plan for the immediate improvement of those roads of national importance, based upon their commercial or military value, and that we urge Congress to appropriate federal funds for that purpose, to be expended under a permanently constituted Federal Highway Commission, leaving to the states and their sub-units the task of improving those roads of primary state usefulness; and

We Further Resolve, That in consideration of the vital importance of road improvement to the nation's welfare we urge that road building material be given a priority classification by federal authorities, so that states and counties may complete unfinished projects; and disconnected sections of roadway serving communities may be joined together, thus making road expenditures both a local and a national asset of inestimable value for preserving the stability of private enterprise and for obtaining a greater nobility of national resources for the prosecution of the war.

We Further Resolve, That, in view of the inability of the railroads to afford adequate transportation facilities for war and domestic needs, the "Committee on National Affairs" of the Ohio Good Roads Federation be authorized to suggest and aid in formulating a general constructive program of highway improvement, embracing all units of government, which will be wholly essential in preserving the agricultural, commercial and military needs of the nation; and to this end, the Committee on National Affairs is hereby authorized to co-operate with the Highways Transport Committee of the National Council of Defense; and that copies of these resolutions be sent to the members of the Committee on Highway Transportation, of the National Council of Defense, Governor of Ohio, United States Senators and Congressmen, the State Highway Commissioner, members of the Highway Advisory Board, county officials, county chairmen, officers and members of the Federation.

HIGHWAY TRAILER CO., Edgerton, Wis., is now shipping heavy-duty trailers. This company is incorporated for $180,000, and recently took over the Edgerton Wagon Works with completely equipped plants aggregating 50,000 sq. ft. of floor space. For the past 3 months the company has been shipping light two-wheeled trailers, and is also marketing the Highway ball-and-socket coupling and the Highway fifth-wheel. A positive bridge lock takes up wear on the ball in the coupling. The fifth-wheel has a spring cushion drawbar and oscillates at every angle. The heavy-duty Highway trailer is equipped with Timken axles and Timken bearings.

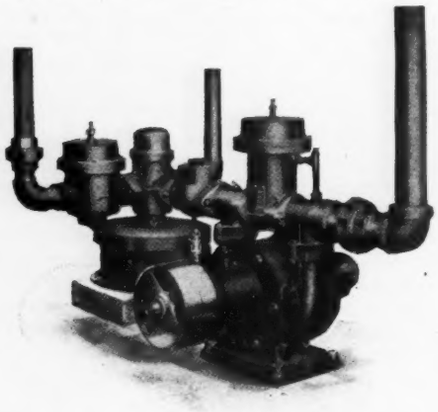
Maxwell One-Ton Truck Demonstrates Its Economy in Fuel Consumption

Driven by one who is reported as never having driven a truck previously, and at a speed of 15 m.p.h., a one-ton Maxwell truck recently went on record as operating for 17.8 miles on one gallon of gasoline. The truck was loaded with a Maxwell touring car of 1970 lb. The gross weight of the truck and its load is given at 5525 lb. The route led through city streets and out over rural roads.

Selas Gas Heating System

An effective and economical gas heating system, applicable to every industrial heating purpose, is being manufactured by the Selas Co., 521 W. 23d St., New York City. The manufacturers claim that with its use, labor, time and from 20 to 40 per cent of the gas are saved and that, because of the uniformity of the heat, uniform results are obtained day after day. The system is very clean and is used in some of the largest industrial plants in the country. The Selas is a one-pipe system.

In the Selas apparatus there is no gas storage and no storage of mixed gas and



The Selas: a One-Pipe Apparatus for Gas-Fuel Industrial Heating

air—two features to which fire underwriters object. With this system, only so much gas and air is mixed and compressed as is required for immediate use. When the supply of mixture falls below the demand, the admission ports automatically open and admit the amount of air and gas necessary to meet this demand. In the reverse instance the ports automatically close. Under no circumstances, it is claimed, can there be any variation of the mixture after the apparatus has once been properly set.

Furthermore, it is claimed, only a part of the necessary air for combustion is mixed in the apparatus, the remainder being taken in at the burners by special Selas bunsens, injectors and nipples. The amount taken in is just below the limits of an explosive mixture, precluding the danger of back fire or explosion.

The Selas apparatus is made in various sizes, with capacities ranging from 350 cu ft. to 100,000 cu. ft. of gas per hour. Prices are furnished on application.

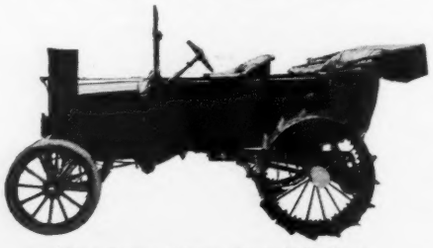
The Twentieth Century Farm Horse Tractor Unit

The 20th Century Farm Horse is an attachment that converts the Ford car into a farm and road tractor, the standard speed of which is 2 m.p.h. Gears for speeds up to 6 m.p.h. can be obtained at an additional cost if desired. When equipped with this unit the Ford car is said to do the work of three or four horses in the field, pulling a loaded manure spreader, a four-section drag, a spring tooth harrow, a binder or a harvester.

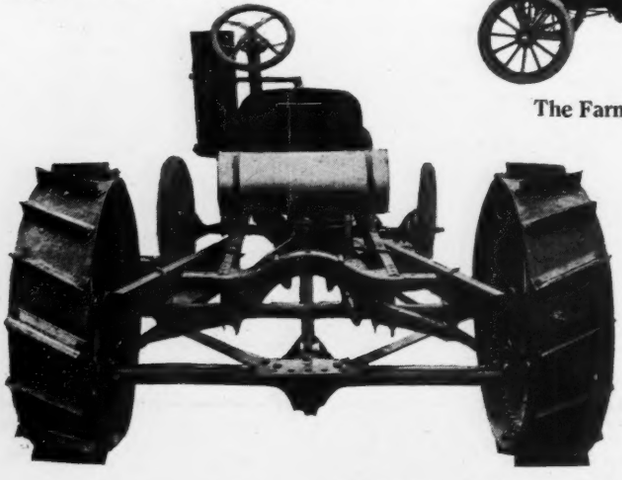
In applying the attachment, the rear wheels, fenders, springs and running board hangers of the Ford are removed. A hole is then bored in the Ford frame on each side and the unit bolted on. Detailed instructions for attaching accompany each unit. The change back into a pleasure car is effected in a short time. For the drive, hardened carbon steel roller pinions replace the regular Ford rear wheels and engage an internal gear on the wheels of the unit. The complete equipment includes a cold rolled steel axle, wheels and pinions, draw bar, bolts, nuts, spacing bars and a circulation pump.

The cooling system is a worm driven Giddings & Lewis pump that forces circulation through the Ford radiator and the auxiliary cooling tank. The heavy wheels of the Farm Horse are 36 in. diam. with a 10-in. face and equipped with angle-iron lugs for field work. Oil cups in the hubs supply sufficient lubrication for the working mechanism. The weight of the attachment is about 650 lb.

The maker asserts that when pulling a two bottom 12-in. plow the 20th Century Farm Horse will plow from 5 to 6 acres in 10 hours, consuming an average of 1 gal. gasoline per hour. This attachment is being offered by the Farm Tractor Co., Fond du Lac, Wis., for $150, f.o.b. factory.



The Farm-Horse Unit Attached



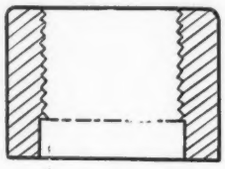
Rear View of the 20th Century Farm Horse

Showing how the various parts are assembled and applied to the Ford car.

Shekleton One-Piece Nutlock

Shekleton Nutlock Limited, patentees, through their agents, Hidalgo Steel Co., 253 Broadway, New York City, are now offering their one-piece nutlock to the trade.

This device differs from their two-piece nutlock described in the May 1916 issue, page 183, which is used with ordinary nuts on ordinary bolts, and is cheaper and quicker assembled.



Section of the Nut, Showing the Recess in the Bottom

The Soft-Steel Coned Lock-Washer

The one-piece nutlock is formed with a specially recessed nut, regardless of style or type of thread in the nut and on the bolt and with a thin soft-steel coned lock-washer made to register with the recess in the nut.

The method of application is extremely simple. The coned lock washer is dropped over the bolt with the cone uppermost and the nut, when tightened down, forces the locking of the cone around and between the bolt threads, giving a grip that will withstand removal by any normal working condition even if the bolt be scant in diameter. As with the Shekleton two-piece device, the tail or tails of the locked washer must be turned up on to one or more flats of the nut at a right angle, thus to form a locker bracket to the nut.

The soft coned lock washers are manufactured by The Stanley Works, New Britain, Conn., direct from steel from their rolling mills and the recessed nuts are made by Russell, Burdsall & Ward, Portchester, New York, and other leading nut makers throughout the United States.

McQuay-Norris Mfg. Co., St. Louis, Mo., has a service flag with 25 stars on it for the members who have enlisted. Nine of the men who have enlisted are from the factory, two from the office and thirteen from the field force. Most of the men who have joined the colors are expert mechanics, and are, therefore, in the engineer or aviation corps.

Sevison Electric Co., Elkhart, Ind., has gone out of business and has sold its assets to Eugene Atkins, Elkhart, Ind. A portion of the stock and equipment has been purchased from Mr. Atkins by the Standard Ignition Co., recently organized for the manufacture of high tension magnetos and accessories. The Standard Ignition Co. is capitalized at $200,000, and the officers of the company are: A. H. Beardsley, president; M. E. Crow, vice-president; E. B. Zigler, secretary and treasurer, and J. F. Stratton, general manager.

CHILTON TRACTOR JOURNAL

Trundaar Tractor Has Crawler-Type Traction

AFTER 23 years of experimenting with various types of farm tractors, the Buckeye Mfg. Co., Anderson, Ind., is bringing out a newly developed model known as the Trundaar. The influence of automobile engineering and the experience of advanced tractor practice are evidenced in this new model.

The Trundaar tractor is being produced at a steel and concrete factory with a floor space of 15,000 sq. ft., and fitted throughout with special machinery for building tractors, including machines for testing both the materials used and the finished product. The company was established in 1880 and incorporated in 1896.

The Trundaar tractor incorporates a number of unusual features. Among the more important ones are: a special tread to enable the tractor to work anywhere on the farm regardless of weather conditions; the Buckeye-Deppe Integrator, designed to enable the practical use of low-grade fuel; complete protection from dust; adequate lubrication; an independent disk clutch controlling each tread and rendering a differential unnecessary; double three-point suspension to absorb shocks and strains on the treads and to prevent loss of traction, and a special tractor engine developing 52 brake horsepower.

The tread is of the endless-belt or track-laying type and is said to require no lubrication. It is built of strong, simple parts and any link or grouser plate may be removed in a few minutes.

Each tread is carried on two chains, the grouser plates being bolted to the master links of the chains. The links connecting adjacent master links are as short as possible to reduce wear on the links in traveling around the tread wheels. Steel blocks, carried on the grouser-plate bolts, hold the short links in place and impart strength and rigidity to the master links. The driving power is taken from a series of hardened steel rollers in the tread drivers by master lugs, one of which is bolted to the center of each grouser plate. Nine of these lugs and rollers are constantly in contact, so that the load is widely distributed and consequent strain and wear are minimized.

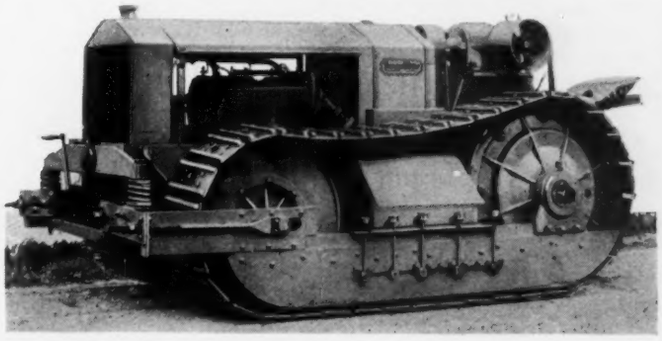
As the grouser plates are 15 in. wide and the length of the tread on the ground is 6 ft. the effective traction area is 2160 sq. in. It is said that practical tests in farm work have shown this tread to give positive traction without packing the soil even under severe working conditions. For ground that is exceptionally soft or where other difficulties render traction insecure, quick detachable mud grousers may be obtained at an additional cost.

The tread drivers, or rear tread wheels, are 36 in. diam. and transmit the driving power to the treads through the rollers they carry to master lugs on the grouser plates. Both tread drivers are mounted on the rear axle, which is a steel shaft 3 in. diam., and each has an individual disk clutch controlling its tread.

Each front tread wheel, or idler, is carried on a short shaft mounted in slots, 10 in. long, in each side of the steel-tread truck frame. Heavy bolt adjustments are provided for aligning the tread wheels and regulating the amount of slack in the treads.

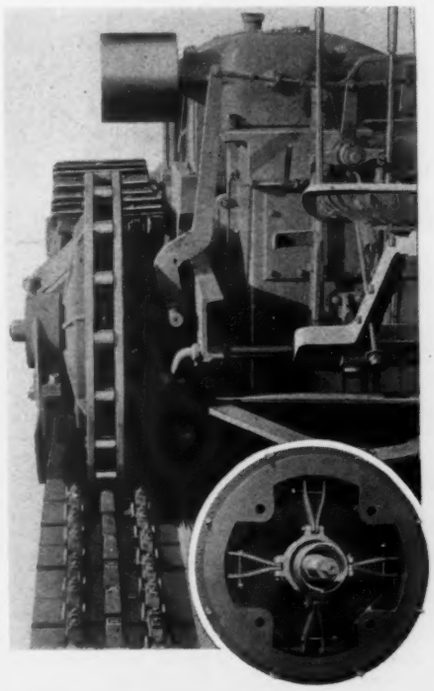
To prevent misalignment or twisting of the tread on the grouser, a series of double trolley wheels is mounted between the tread drivers. Two pairs travel on the grouser plates, inside the chains and straddling the driving lugs. Another series travels on the plates outside the chains. This construction, which is similar on each tread, is said to prevent the tread proper from moving sidewise, twisting or coming off any of the tread wheels. Protection for the tread chains on the ground, the tread wheels, and trolley wheels is provided by a ⅜-in. armor-steel apron on both sides of each tread.

Simplicity in Design and Sturdiness Characterize the Trundaar Tractor.



Trundaar Tread Driver With the Tread Detached

Exposing the steel rollers that impart the drive to the master lugs on the grouser plates.



The Trundaar has a double three-point suspension. The heavy front axle is pivoted at the center of the main frame end plate and each end rests on a spiral spring mounted on the tread truck frames.

When one of the treads is subjected to a shock or strain by striking a stone or other obstacle, the flexible suspension tends to prevent the effect from being transmitted to the remainder of the tractor. The other tread can thus continue to exert maximum traction.

Steel is used for the main frame of the tractor, which carries the radiator, engine and flywheel, engine-hood, 30-gal. fuel

tank, and on a cross-bar in the rear, the pedal and control-lever assembly and driver's seat.

The 4-cylinder 4¾x6¾-in. Buckeye-Waukesha special tractor engine used in the Trundaar is designed to operate effectively at tractor speeds under tractor loads and conditions. It is simple to operate, and all parts are easily accessible. Three piston rings, each ¼ in. wide, are used per cylinder. Built into the engine is the Waukesha patented governor.

The radiator is especially designed for tractor service and is of large capacity.

Ignition is by Kingston high-tension magneto with an impulse starter. The Buckeye-Deppe integrator, which is used on the Trundaar tractor, is mounted between the intake manifold and the carburetor and is designed to make low-grade fuel operate effectively and economically. By creating a homogeneous, dry, fixed, superheated gas instead of a wet mixture only partially vaporized, more combustion is said to be secured. To prevent dust or other foreign matter from entering the cylinders and causing wear, an effective air cleaner is fitted to the air intake of the carburetor. The main engine clutch is a multiple-disk type, running in oil. A feature of this tractor is the individual multiple-disk clutch controlling each tread. These clutches, which render a differential unnecessary, are incorporated in the tread drivers and run in oil. Each clutch comprises a driving wedge, two driving rings, two driven rings and the outside and inside halves of the tread drivers. A compression spring holds the wedge ring in contact with the beveled faces of the driven rings.

When the operator pulls the lever controlling this clutch, the wedge ring is withdrawn from contact, thus stopping the tread. Releasing the lever allows the spring to force the wedge back into engagement. Control and steering are easy and simple with this construction, which also enables the tractor to turn completely around in a 12-ft. circle.

To facilitate control and to render it positive under varying conditions an expanding brake is carried in a drum on the housing of each tread driver. These brakes are 24 in. diam. and are lined with Thermoid.

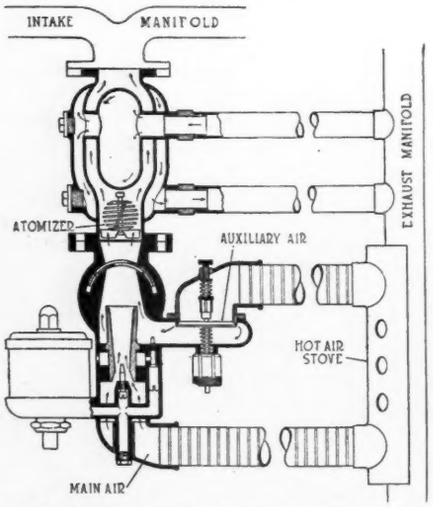
The Trundaar spur gear transmission provides two speeds forward and reverse. The main driving gear and pinion are 5½ in. wide and the reduction gears 2 in. wide. Roller bearings are used for the 2½-in. countershaft in the transmission and also in the tread drivers. End thrust and side stress are taken by ball thrust bearings. Grease cups are provided for all bearings not having internal lubrication.

The power pulley of the Trundaar Tractor is driven by inclosed chain and sprockets from the main drive shaft through a special gearcase mounted on top of the transmission. The pulley operates directly over the left tread driver. Belt connection may be made quickly from either front or rear, and the proper tension is easily secured. With its 10-in. diameter and 8-in. face, this power pulley is claimed to be capable of driving the largest farm machinery.

In designing the Trundaar tractor, the Buckeye engineers have endeavored to provide comfort as well as ease of operation. All control levers and pedals are located within easy reach of the driver, who is provided with a spring-suspended seat which absorbs the jolts and jars.

The compact, practical appearance of the Trundaar tractor is increased by a standard coloring of battleship gray, trimmed with black. The tractor is 6 ft. 2 in. long overall, 4 ft. 10 in. in height and weighs 9500 lb. It sells for $2950.

Pulling a Four-Bottom Plow, the Trundaar Tractor is Easily Operated by One Man



Section Through Buckeye-Deppe Integrator

Carburetor arrangement for heating the fuel and air, and the mechanical atomizer in the form of a whirling fan above the center-opening throttle, are shown.

Holt "45" Caterpillar and Dodge Touring Car of the First Motorized Battery Formed

The honor of being the first motorized battery formed belongs to Battery C, 5th F. A., commanded by Capt. W. H. Capron and formed at Fort Sill, Oklahoma. In the case of the small caliber guns, tractors haul a section of artillery consisting of a caisson and limber and a gun and limber, one of these sections being shown herewith. Each tractor hauls about nine tons. The touring cars convey officers to points desired.

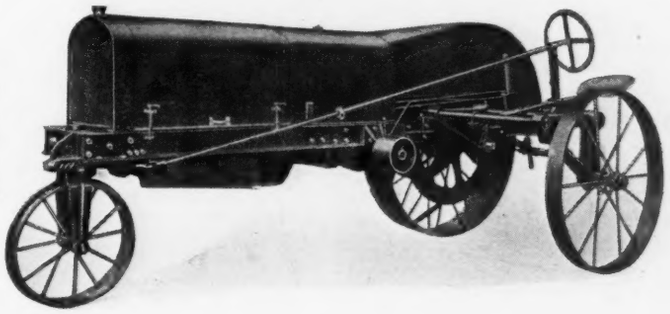
"Farmer Boy" is Three-Wheeled Tractor

THE "Farmer Boy" tractor is made by the McIntyre Mfg. Co., which, before entering the tractor field, had fifteen years' experience in the manufacture of special machinery, railroad equipment, and automobile parts. The president, a man of experience in business and finance, is president of the City National Bank, of Columbus, and a director and stockholder in some of that city's important industrial companies.

The "Farmer Boy" Model D tractor has but three wheels, which allows easy and short turning and permits the frame being built high enough for practical cultivating. Fewer parts, a less complicated construction, the use of an easily operated steering apparatus and the need of less attention are advantages claimed for this type tractor.

—in the field, doing belt work and cultivating.

A Waukesha, 3¾x5¼-in., 4-cylinder engine, built specially for tractor work, is used. It has a K-W magneto and a specially designed governor. The engine speed ranges from 800 to 1200 r.p.m. All gears are steel and run in a dust-proof case containing oil. The crankshaft and bearings are oversize.



Three-Wheeled "Farmer Boy" Tractor. Designed to do Practical Cultivating as Well as Other Farm Work.

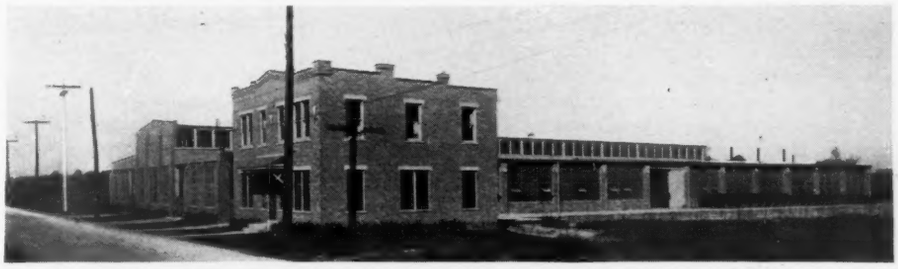
Model D "Farmer Boy" Tractor at Work Pulling a Disc Harrow Through a Field

The multiple disc, Borg & Beck clutch is entirely enclosed. The transmission is of the maker's design and has S. K. F. bearings. A centrifugal pump and a 7-gal. radiator provide cooling. Steering is through an automobile type gear and the steering rod is adjustable to any length.

The frame is 5-in. pressed steel channels. The main drive wheel is 5 in. diam. with a 12-in. face, equipped with 36 lugs that insure traction. The front wheel is 22½ in. diam. and has a 6-in. face, with an adjustable, removable center band to prevent skidding. The side wheel is self-adjustable and is 40 in. diam. with a 6-in face.

A differential is eliminated by transmitting the power from the engine directly to the drive wheel placed immediately in back of the engine. This feature prevents excessive loss from friction. The drawbar pull of the "Farmer Boy" tractor, in proportion to its weight, is said to be very great.

A special feature is the method of adjusting the single side wheel so that the machine is kept level at all depths of the furrow, on hillsides, and in cultivating. The tractor is suitable for all general farm work



The New Plant at Columbus, Ohio, Where the McIntyre Manufacturing Company Produces the "Farmer Boy"

There is one forward and one reverse speed. The field speed is from 2 to 2½ m.p.h. A 10- to 12-hp. drawbar pull is obtained and from 18 to 20 hp. on the belt. The belt pulley is 12 in. diam. and is placed on the left side of the engine directly below the frame. The gasoline tank has a capacity of 19 gal.

The weight of the "Farmer Boy," fully equipped and ready for use with any implement, is 3000 lb. The price is $850 f.o.b. Columbus, Ohio.

Creeping-Grip Type Tractor, Takes Its Power From a Brennan Engine

This large crawler tractor is equipped with a Brennan model 12, four-cylinder engine. The bore and stroke are both 6 in. The transmission of power from the engine to the tractor grip is through sprockets and roller chains from a jackshaft. A Syracuse transmission gear is used. The Brennan Motor Manufacturing Company, Syracuse, N. Y., produces the engine and The Lombard Company is the maker of the tractor.

SMITH MOTOR TRUCK CO., Chicago, Ill., has agreed to manufacture the product of the bankrupt Smith Form-A-Tractor Co. for the benefit of the company's creditors. The tractor company had no working capital when the petition in bankruptcy was filed and was unable to convert its assets into a marketable form.

Two-Wheel Beeman for Small Farms

FOR the truck or garden farmer the Beeman Garden tractor is a very desirable machine. It is small and very easy to operate and control. Besides being effective in truck garden work, it will perform satisfactorily when used in nursery cultivation and fruit growing. It can be used in many places where horses are not able to go—around thorned shrubs, small trees, and vines. By fitting the wheels with hoods or fenders the tender plants are protected from being crushed and broken.

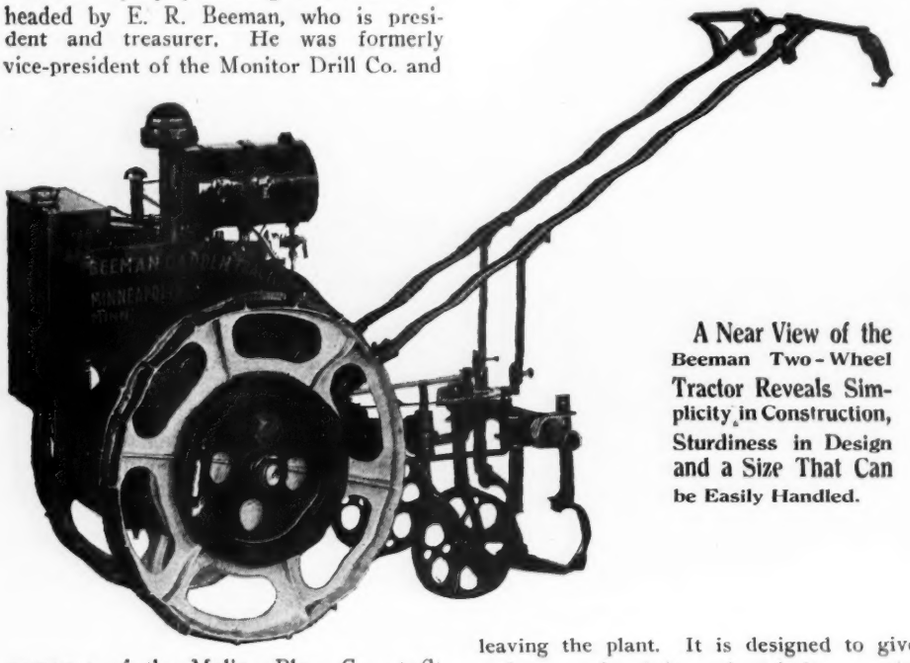
The company producing this tractor is headed by E. R. Beeman, who is president and treasurer. He was formerly vice-president of the Monitor Drill Co. and manager of the Moline Plow Co. at St. Louis Park. Three years were spent by him in directing the development and perfection of the Beeman Garden tractor. Mr. P. J. Lyons, a man of wide experience in the tractor field and now president of the Whitman Bull Tractor Co., of St. Louis, Mo., is director. The other members of the Beeman Garden Tractor Co. have had experience in tractor work with other companies so that the personnel in back of the Beeman tractor should be capable of producing a correctly designed and constructed machine.

The construction of the Beeman Garden tractor is simple. Any one who understands a gasoline engine can keep it in proper working order. Every working part is inclosed and runs in oil. This protection gives the machine longer life. The entire tractor is properly adjusted before leaving the plant. It is designed to give 4 hp. at the belt and 1¼ hp. at the drawbar.

The engine is 3½ x 4½ in., 4 cycle. A speed of 2000 r.p.m., giving 3 m.p.h. on the road and 2½ m.p.h. in the field, can be obtained. A thermo-syphon cooling system with a comb radiator and fan is used. Oiling is through splash and gravity.

The carburetor is a ¾-in. Kingston. Ignition is provided by a Heinze magneto. The wheels are 25 in. diam. with a 3½-in. tread. The weight is approximately 450 lb., which is extra heavy to insure effective traction. The overall width of the tractor is 17 in. and the height 39 in. One gallon of gasoline is said to run the engine for five hours under field working conditions and about seven hours on the belt.

Price quotations on the tractor itself, and on all attachments, such as an air cleaner, extension rims, extra large castor wheels, and cultivating attachments will be furnished by the maker, the Beeman Garden Tractor Co., 311 Sixth Ave., S., Minneapolis, Minn., upon request.



A Near View of the Beeman Two-Wheel Tractor Reveals Simplicity in Construction, Sturdiness in Design and a Size That Can be Easily Handled.

The Beeman Garden Tractor Gives One and a Quarter Horse Power at the Drawbar and Provides an Effective Little Machine for Truck or Garden Farming

Tractors Used to Run Shop

An accident recently occurred in the factory of the Moline Plow Co., Moline, Ill., which put the power plant out of commission and the entire shop was shut down. However, the Moline-Universal tractors were put to work to furnish belt power. About a dozen of these tractors were run into the shop, erecting, and testing departments, and hooked up to the line shafts and the factory was running as usual the next day. The tractors furnished plenty of power and the plant was kept running until the power plant was repaired and again put into operation.

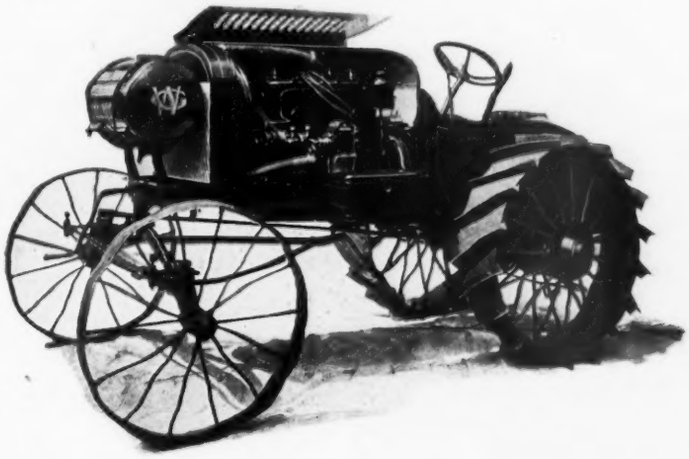
THE CARRANZA GOVERNMENT OF MEXICO, through General Alfreda Brecedia, head of the Mexican army, purchased $100,000 worth of tractors and graders for use in Mexico. Of this amount $50,000 was invested in Avery tractors, the deal being closed through C. A. McCline, the Avery manager at Dallas, Texas. The general stated that Mexico is planning a system of highways and the tractors and graders will be especially useful in this work.

UNITED STATES MOTOR TRUCK CO., Cincinnati, O., has arranged a novel and interesting sales contest which is intended to prove of assistance to the salesmen taking part in it. The salesmen have been divided, for the purposes of the contest, into three classes, salesmen working for distributors, the distributors themselves and the district representatives of the company. The contest will run for ten weeks and will be conducted as follows: The contestants will receive each week a questioner containing 10 questions having to do with the motor truck and its operation and with methods of selling in connection with different classes of business. The salesmen are asked to seek the replies to these questions. The correct answers to the questions are mailed to all two weeks after the set of questions is sent out. Prizes will be awarded to the winners in each group, and the company believes that the knowledge of the sales force concerning every phase of the motor truck business will be greatly enlarged.

One-Star and Two-Star International Farm Tractors

The International Machine & Tool Corp., of Delaware, with offices at 72 Trinity Place, New York City, is making two tractors—a One Star and a Two Star model.

The One Star tractor has a 3-in. channel steel frame, curved to form a central carrier in front, and secured to the engine case. The front axle is centrally pivoted and is heavy I-beam section.



View of the One-Star Model With Hood Raised

The front wheels are 34 in. diam. with a 4-in. face. The specifications for the rear wheels include a diameter of 40 in. and a 10-in. face that has two 4-in. sections separated by a space of 2 in. This is to prevent side skidding and packing in wet ground.

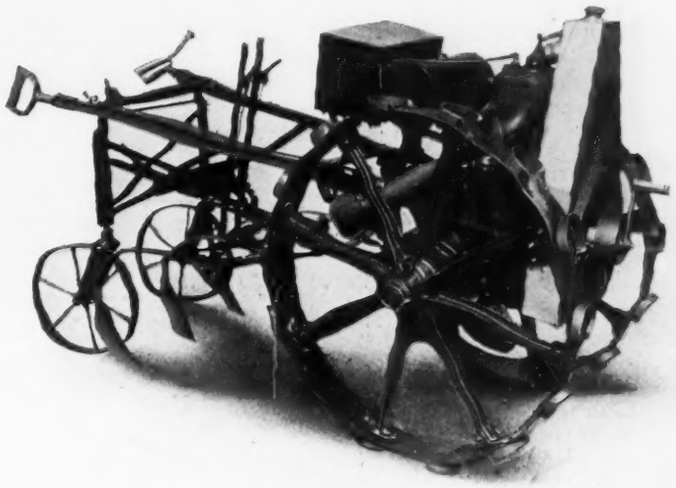
The engine is a 4-cylinder, vertical L-head type, with inclosed valve mechanism. It is designed for kerosene and low grade fuels. A Kingston dual carburetor is used. Lubrication is through a plunger pump, and a special honeycomb-type radiator provides cooling for the engine.

A 15-gal. kerosene fuel tank is mounted in front of the radiator on brackets attached to the frame. A gasoline tank of 1-gal. capacity is placed on the dash-board.

The transmission has three speeds forward and reverse. A pulley, giving a belt speed of 2600 ft. per minute, is mounted inside the rear wheel guards. The drawbar is hinged to the underside of the axle housing. The outside turning radius of this tractor is given as 20 ft.

The Two Star model is similar to the one described above except for a different type radiator, fuel tanks of different capacities, a Borg & Beck clutch, a Nuttall enclosed transmission, a stronger frame and larger wheels. A specially designed drawbar is also incorporated in the Two Star model. The turning radius is 15 ft.

The International Machine & Tool Corp. also produces a farm tractor attachment, known as the "Crawler Tractor," that is easily attached to an automobile or truck without disturbing a nut or bolt. The price quoted is $250. Complete details will be supplied by the maker.



Universal Tractor With Diverse Cultivator Attached

Universal Tractor at $365

The Universal motor tractor provides a valuable field worker as well as a 4-hp. plant that will operate small farm machinery. With ordinary farm implements this machine will harrow, drill, plant, weed, and cultivate as desired. Its size makes it particularly suited for truck farming. It is easily operated and controlled by two handles.

The engine is water-cooled, with a 3½x5-in. cylinder. The carburetor has 1-in. throttling. A centrifugal-type governor is enclosed and runs in oil. Splash lubrication, with a constant level, keeps the working parts in running order. Ignition is provided by an Atwater-Kent system. The ball bearings are die-cast white babbitt.

Drive is through a hardened steel worm on a bronze worm wheel. The drive wheels are 36 in. diam. with a 5-in. rim. The tread is adjustable from 26 to 42 in. The steel axle is 1¾ in. diam.

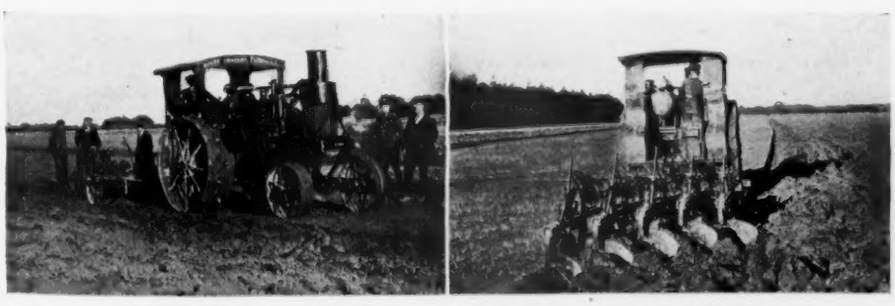
A speed of from 1 to 3 m.p.h. is given by this 4.9-hp. tractor. It has a drawbar pull of 200 lb. and weighs 750 lb. The dimensions, when boxed for shipment, are 84 x 42 x 36 in. The price of $365 includes a single trailer wheel, a double-strength gage assembly and a spring-tooth diverse cultivator. All other equipment is supplied at an extra cost. The Universal Tractor Co., Inc., 245 W. 55th St., New York City, is the manufacturer.

Remy Tractor Company Formed

Of interest to the automobile world, and to that section of it concerned with the development of the tractor industry in particular, is the news that a company, known as the Remy Tractor Co., is being formed at Kokomo, Ind. The Remy brothers, Ellwood Haynes and George Kingston are among those interested. It is reported that the company has already built six machines, is putting through 25 at the present time and is negotiating for the building of a $750,000 factory.

New Tractor From Detroit

A company has been organized in Detroit by several business men of that city to be known as the American Tractor Co., with offices at 1118 Chamber of Commerce Bldg. The company contemplates capitalizing for $500,000, and has for some time been working on a model tractor, which it is expected, will be on the market about January 1, 1918. A novel cooling system and an improved engine will be features of note in the new tractor.



Avery Tractor Working Near Wellington, New Zealand, After Long Trip From America

The Avery Company, Peoria, Ill., recently sold a tractor to the New Zealand Government, through its agent, A. Hatrick, of Wanganui, New Zealand. The tractor is said to be one of the first of America's tractors to be used in New Zealand and is performing satisfactorily. It is shown in the illustrations above, pulling a five-bottom plow of the Avery Company.

FAHRIG METAL CO., New York City, manufacturer of anti-friction metal used for bearings of truck, aeroplane and other motors, has opened another plant, which will double the present production of metal.

Tests at Tractor Demonstration

The National Tractor Demonstration Committee, at a meeting held recently at Chicago, voted to have one big national tractor demonstration in 1918. The following tests were decided upon: Fuel consumption in plowing, disking and other field work; different types of traction wheels, wheel equipment and tractive efficiency, to include tests running wheels in furrow, on unplowed and on plowed ground; steering mechanism; and belt work.

It is planned to hold at least one 10-hr. plowing run during the demonstration. Another point decided by the committee was that not more than five other demonstrations, at points to be decided later, will be sanctioned. These demonstrations will be conducted along the lines of previous exhibitions, but will not include any tests. From 3000 to 5000 acres of land in one body or made up of adjoining fields will be required for this demonstration, which will be held in the vicinity of Detroit or Cleveland if a desirable stretch of ground can be found.

American-Made Tractors Doing Their Share in France

Americans have been under the impression that all the people of Europe were engaged chiefly in manufacturing guns, making munitions and such materials as destroy human lives and cause devastation.

But such is not the case, for France and all the other countries during this time have also devoted their time to tilling every available spot of land for the production of more foodstuffs, and they have not adopted the methods which are gradually disappearing, namely, the horse and horse-drawn plow, but they have adopted the tractor, and the American tractor at that. They have adopted the method of tractor farming because it does quicker and better work and produces greater crop yields. That is the important thing and the reason why the tractor will soon find its way to every farm of reasonable size.

With cheerful philosophy and sober industriousness, the German prisoners in France are settling down to making the best of things. From the standpoint of the government and those who direct the nation's energies in wealth production, the important thing about prisoners is the work they can do. In France a careful system has been evolved to sort out every kind of artisan, craftsman and laborer and assign him to where his abilities are most in demand. The farm laborer has been sent to the farming districts, the stone-mason and the carpenter to the towns and villages in need of reconstruction. France has been singularly fortunate in that most of her prisoners are Germans, who are good all-round workers. A large number of German prisoners have had a technical training or possess special skill in addition to a patient, plodding, persevering temperament.

"Happy Farmer" Tractors to be Shipped to France

The La Crosse Tractor Co., La Crosse, Wis., has arranged to have F. C. Upton, of Minot, N. D., to represent the company and Gaston, Williams & Wigmore, Inc., New York, N. Y., in the shipments of several hundred Happy Farmer tractors to France. Mr. Upton is president of the Minot Motor Sales Co., Minot, N. D., which he organized and incorporated about a year ago. Prior to this venture he was connected with the J. I. Case Threshing Machine Co. Mr. Upton will leave at once for France, where he expects to spend the next four or five months in the interest of the companies which he is representing.

HOLT MFG. CO., Peoria, Ill., at a meeting of the board of directors recently, let contracts for new buildings and machinery aggregating $1,000,000. With the completion of these additions the size of the plant will be doubled.

ST. LOUIS MANUFACTURERS' & DEALERS' ASSOCIATION held a meeting recently at which it was decided that all repairs and all repair parts would be on a cash basis in the future. The cash-on-delivery system has prevailed in Cleveland for some months and in Omaha for over a year, and the dealers and automobile owners are so well satisfied that they cannot be persuaded to return to the old system.

German Prisoners in France, With American Tractor, Aid in Producing Greater Crops

Third National Tractor Show

The third annual National Tractor Show will be held in Kansas City the week of February 11 to 16, 1918. All arrangements for the accommodations of the exhibits have been completed. The show will again be managed by Guy H. Hall, Secretary and Treasurer of the Kansas City Tractor Club. Mr. Hall, to whom credit is due for the splendid manner in which the former shows have been staged, has determined to make the show for 1918 the greatest ever. In view of the fact that the United States Government has officially endorsed the use of tractors and power farming machinery and is urgently pushing the cultivation of all crops to answer the demands of these history-making times, it is concluded that this year's show will arouse a greater interest than either of the previous ones. Everything is favorable to make this year's show the greatest exhibit of tractors, tractor accessories, and power farming machinery ever held in the history of America.

Guy H. Hall, Kansas City Tractor Club

This show is to the manufacturers of tractors, tractor accessories, and power farming machinery what the great national automobile shows are to the motor car manufacturers of America. In other words, the National Tractor Show is a technical exhibition as well as a show for manufacturers, dealers, and users. Furthermore, the National Tractor Show is a great clearing house of ideas contributed by the manufacturers and represents advanced types of construction. It is only reasonable to assume that the tractor show of 1918 may be directly responsible for tractor development on a par with that development responsible for the Liberty aeroplane engine and the Liberty truck. It is expected that the Society of Automotive Engineers will be fully represented at the coming show, and that greater activity will again be displayed by practically all the Allied and Neutral Governments. The National Tractor Show will be held the same week as the Kansas City Automobile Show. This will enable out-of-town dealers to take in both shows while in Kansas City and will give the tractor manufacturers an opportunity to line up many automobile dealer representatives.

ACME MOTOR TRUCK CO., formerly of Detroit, Mich., has removed all stock and equipment to Anderson, Ind.

Four-Wheel Drive and Steer Depue

A RECENT entrant in the tractor field is the Depue Bros. Mfg. Co., of Clinton, Iowa, which is producing a 4-drive tractor of unusual design. The four wheels are solid and have a face of 10 in. Their design makes the tractor suitable for road work as well as farm work.

A distinctive feature of the Depue tractor is the method of transmitting the power to all four wheels. The drive is through a large bevel ring gear secured to an upright shaft, which in turn delivers the power to a heavy differential on each axle assembly. This method is said to give the same traction power in turning as in going straight ahead.

With this type of transmission there is said to be created an equal distribution of traction weight and strain, resulting from having the drive through all four wheels. Wear and breakage is greatly reduced thereby.

By running all gears in oil and using roller bearings throughout, a high degree of effectiveness is obtained and a greater power is delivered at the drawbar. All working parts are inclosed and protected from dust and dirt. The axles are attached to the frame by a 3-point suspension which is affected through what is called an "oscillating bolster" bearing. Both axles are live.

Construction Features

The standard equipment includes a 4-cylinder 4¼x5½-in. Buda engine, having from 750 to 1000 r.p.m., a Dixie high-tension magneto with an impulse starter, a Pierce governor, a Stromberg carburetor, a Borg & Beck dry-plate clutch, and Timken roller bearings throughout.

Only one size tractor is being built at present, and it weighs about 8000 lb. and is 140 in. long, 66 in. wide, and 102 in. high. The given diameter of the turning circle is 16 ft. The wheels are 40 in. diameter and are supplied with removable lugs. The transmission affords 3 speeds forward and one reverse which give a speed range of from 1½ to 5 m.p.h. Drawbar and belt horsepower ratings are 20 and 30 respectively.

From three to four 14-in. plows are recommended for this tractor and from 15 to 20 acres can be plowed in a 10-hr. day, depending on the condition of the soil.

The front and rear axle housings are of special design and are fitted with standard-type heavy-duty differentials. It is not necessary to dismount the axle assembly to remove the axle shafts. Another feature is that all parts of the front axle are interchangeable with those of the rear axle, as are also the wheels. The frame is heavy 7-in. channel steel, strong enough to keep the working parts in proper alignment. Provision is made for burning either gasoline or kerosene.

Depue Four-Wheel Drive Tractor Climbing an Embankment to Demonstrate Its Power

Rumely Oil-Pull Tractor in New Size

A new model of the Oilpull tractor has been developed by the Advance-Rumely Thresher Co.'s engineers, which is rated by the manufacturer at 14-28 hp. This new Oilpull embodies a number of improvements that experience and various tests have shown to be practical. Like all Rumely Oilpull tractors, this latest size can use kerosene, distillate, or coal oil. In fact it is guaranteed by the maker to burn any cheap fuel with facility.

A few of the features of this tractor are: a horizontal 2-cylinder, slow-speed engine which runs with very little vibration; a Secor-Higgins oil carburetor; an oil cooling system, and an inclosed transmission, the gears of which are machine-cut from case-hardened steel and operate in an oil bath. Hyatt roller bearings are used in the transmission shaft and on the rear axle. A powerful foot-brake is provided which is said to be capable of stopping the tractor under all conditions. A roomy cab is provided for the convenience of the operator.

The 14-28 Oilpull has two forward speeds of 2 2-10 and 3 m.p.h. and one reverse speed. All gear-shafts can be made with one lever. The belt-pulley is mounted on the crankshaft and is placed so that the operator can easily line the tractor up with a thresher or some other machine. A self-guide, which is said to be easily operated and very effective, is provided so that the tractor is self-steering when used for plowing. High front wheels allow the tractor to be more rapidly operated in muddy, sandy, loose or very rough ground. A short turning radius is obtained by using an automobile-type steering apparatus.

Latest Rumely Oil-Pull Tractor, Rated at 14-28.

By reason of a very long draw-bar pull the new 14-28 Oilpull tractor is capable of handling four 14-in. bottoms in practically any land, and in some instances it is said that 5 bottoms can be handled.

Besides being able to turn over from ten to twelve acres in the average day under average conditions, with four 14-in. bottoms, the 14-28 Oilpull tractor furnishes enough belt-power to operate a small thresher, with all modern attachments, to its full capacity, and to run a large silo filler satisfactorily. One man can operate this tractor and handle a 4-bottom plow by reason of the self-guide attachment.

With the addition of the 14-28 tractor to its line, the Advance-Rumely Thresher Co., of LaPorte, Ind., now offers three sizes of Oilpull tractors—a small size, the new 14-28 hp.; a medium size, 18-35 hp., and a large size, 30-60 hp.

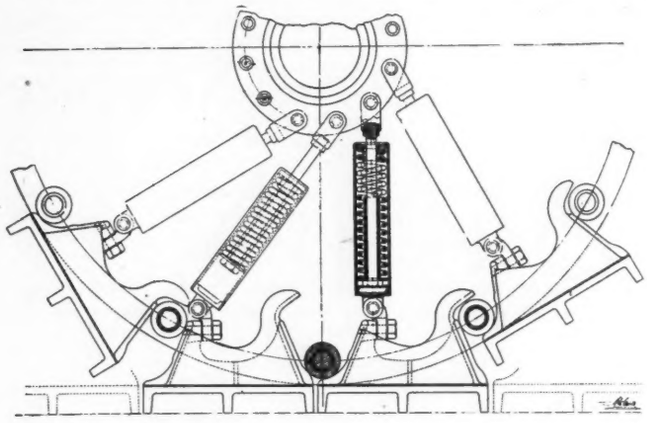
New P-T Tractor Wheel Has Novel Tread of Italian Design

TRACTION wheels of proper design and construction are essential to the effective draw-bar operation of a farm tractor. This applies particularly to light-weight tractors. To the numerous types of tractor wheels that are used on present-day farm tractors has been added the P-T wheel, a tractor wheel of Italian design that is being placed on the market by the recently organized P-T Wheel Co., of Dayton, Ohio.

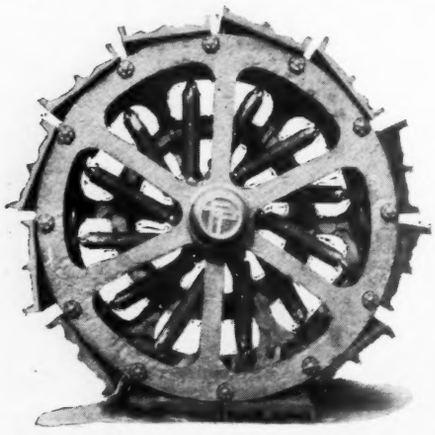
The P-T wheel is of the self-laying track type, being equipped with a series of pads that are successively laid down to form a continuous track over which the wheel rolls when in motion. These pads are held against the rim of the wheel by springs instead of being pivoted to it, which is said to allow the wheel to roll smoothly over the track without causing a relative movement of the pads on the ground, thus reducing wear, damage to the roads, and unnecessary loss of power.

This pad wheel is designed to secure effective traction through the friction of its pads, which grip the road as the wheel rotates. The pads are free along the circumference of the wheel, but each has a surface which corresponds to the involute curve described by each of a number of rollers within the wheel. Power is transmitted through these rollers which are constantly in contact with the surface of their respective pads. The friction of the pads on the ground prevents the wheel from slipping.

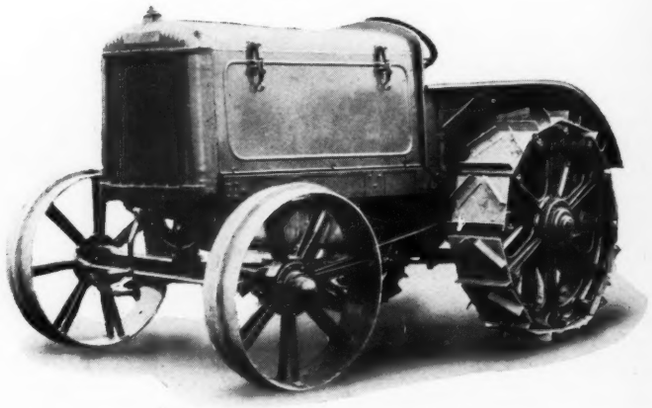
The P-T wheel was developed in Italy by Messrs. Pavesi and Tolotti to meet military emergencies and has been so successful in operation that it is now being made for farm and road tractors doing heavy duty work. Its comparative simplicity in construction and inexpensive upkeep and also the fact that it can be used on the tractor without altering the conventional transmission system, obtain for it much recognition at this time of intensive tractor and truck operation.



Drawing of P-T Wheel Construction



Side View of a P-T Tractor Wheel



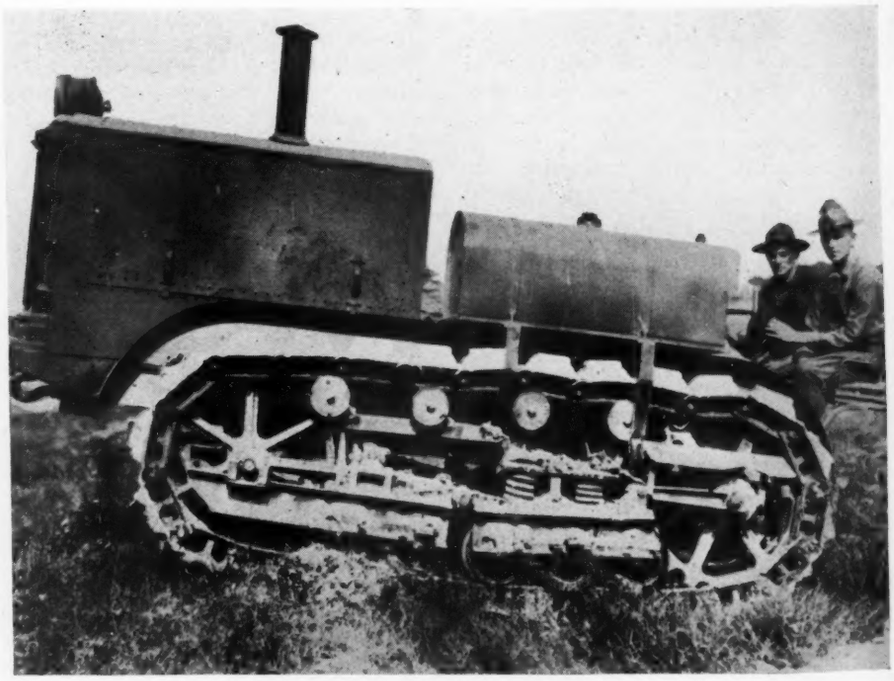
P-T Wheel on a New Tractor That Will Soon be Placed on the Market.

Coming Tractor Events

Feb. 11-16. Kansas City, Mo. Third Annual Tractor Show. Kansas City Tractor Club, Studebaker Bldg., 13th and Hickory Sts., Guy H. Hall, Secy.

Feb. 16-23. Newark, N. J. First Regiment Armory. New Jersey Auto Exhibition Co. Claude E. Holgate, 22 Washington Place, Mgr. Tractors, passenger and commercial cars.

Feb. 25-Mar. 2. Omaha, Neb. Auditorium. Omaha Auto Trade Assn. Clarke T. Powell, 2051 Farnam St. Tractors, passenger and commercial cars.



Caterpillar Truck Used by Marines While Bringing Up Light Artillery

The Marine Corps of the United States Navy has numerous trucks like that seen in the photograph, which they use for bringing up light artillery, or any other work for which a horse is generally used

Table of Contents

Clear the Way

Help Our Army, Navy and Allies to Win This War

AMERICA'S RAILROADS are doing wonderful work, but they need help.

Freight cars must be unloaded and terminals cleared.

If it is your job, speed up loading and unloading of cars on private sidings.

Do not be a slacker by trying to save expense of labor or space by using freight cars as storage houses.

If your merchandise is congested at the terminals and you have not sufficient teams or motortrucks to move the goods at once, buy them or hire public ones.

If you can't do this, do something else—ask your neighbor to help you. Why hesitate to hire your neighbors' trucking facilities?

OFFICERS
EXECUTIVES
MANAGERS

We must pull together.

Shipping Departments throughout the country demand the personal consideration of executives.

Co-operation throughout the entire establishment with the Shipping Department is vital.

Ascertain all the old rules and regulations your Shipping Department is expected to carry out, and if they do not fit the present emergency, throw them away.

Plan to reach nearby points by motor trucks, teams or waterways—save the railroad terminals. Twenty-five per cent (25%) of case, barrel and package merchandise can be delivered in this way, and help break the congestion. No one wants embargoes.

EXCLUSIVE GOVERNMENT TERMINALS

If the railroads decide to reserve certain terminals exclusively for Government materials, do not grumble, but go the extra distance and haul your goods to or from other terminals.

It may be necessary to have a National Terminal Clearing Day in order to clear all terminals throughout the entire country.

NATIONAL TERMINAL CLEARING DAY

If we have a Terminal Clearing Day, keep your teams and motortrucks going and keep your receiving departments open continuously 24 or 48 hours, if need be, and give the railroads a chance to catch up.

Let everybody be prepared some way, somehow, to move their merchandise away from the terminals immediately.

This appeal Contributed by The Autocar Company, Ardmore, Pa., Manufacturers of "The Autocar Motor Truck"